

**Grand Pier L.L.C.
401 North Michigan Avenue
Chicago, Illinois 60611**

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EPA Region 5 Records Ctr.



225817

**Work Plan for Site Radiation
Survey and Excavation Soil
Management**

E.I.
3/20/00

**Grand Pier Center
Chicago, Illinois**

STS Project No. 24418-XK

March 20, 2000





March 20, 2000

Mr. Michael Witte
Grand Pier L.L.C.
401 North Michigan Avenue
Chicago, Illinois 60611

RE: Work Plan for Site Radiation Survey and Excavation Soil Management, Grand Pier Center, Chicago, Illinois - STS Project No. 24418-XK

Dear Mr. Witte:

Attached please find our Work Plan for the above referenced project. This Work Plan reflects changes requested by USEPA following their review of an initial draft (March 6, 2000) and Revision 1 (March 16, 2000)

Please contact us with any questions you may have regarding this project.

Regards,

STS CONSULTANTS, LTD.

A handwritten signature in cursive script, reading "Richard G. Berggreen".

Richard G. Berggreen, C.P.G.
Principal Geologist

Attachment

**GRAND PIER CENTER L.L.C.
401 NORTH MICHIGAN AVENUE
CHICAGO, ILLINOIS 60611**

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Property Owner: Grand Pier Center, LLC

Property Location: Parcel Bounded by Illinois (south), St. Clair Street (west), Columbus Drive (east), and Grand Avenue (north), excepting the northwest corner of this block.

Parcel ID Number: 17-10-212-019

**WORK PLAN FOR SITE RADIATION SURVEY
AND EXCAVATION SOIL MANAGEMENT
GRAND PIER CENTER
CHICAGO, ILLINOIS**

1.0 INTRODUCTION

The subject property for this Work Plan is bounded by Illinois Street on the south, Columbus Drive on the east, Grand Avenue on the north, and St. Clair Street on the west, with the exception of the northwest corner of this block which is not included in the development (Figure 1). Note that the currently proposed development consists of the eastern approximately 428 feet of this parcel (Areas B and C). The southwest corner is proposed for future development (Area A).

Proposed development includes a slab-on-grade retail facility occupying the eastern part of Phase 1, (Area C) and other retail occupying the western part of Phase 1 which would include a basement (Area B). The high-rise tower proposed for the Phase II parcel (Area A) is proposed as slab-on-grade. All structures will be supported on a caisson foundation system. Grade beams will be incorporated in the foundations for the eastern slab-on-grade construction (Area C).

Development of the site began December 27, 1999 and was halted February 29, 2000. When construction activities start again, work hours will be from 7:00 a.m. to 7:00 p.m. It is proposed to work 6 days a week.

The site is owned by Grand Pier Center LLC, who are responsible for implementing this Work Plan. Grand Pier is contracting with Morse Diesel, Inc. as Construction Manager and STS Consultants, Ltd. (STS) as Environmental Consultant to complete a multi-use commercial development on this property.

The subject property has had a variety of land uses. Two underground storage tanks, apparently for heating oil, were removed from near the northeast corner of the site as construction began. Building foundations and floor slabs indicating the former presence of a basement at the east end of the site were encountered in geotechnical borings and caisson test pit exploration. The 1950 Sanborn Fire Insurance map shows a Chicago Police Traffic Division Headquarters at the southeast corner of the site. Other features evident on plans, historic aerial photos and fire insurance maps of the site include:

- A freight tunnel extending approximately 70 ft onto the site from the east, near the northeast corner, as shown on Figure 6.
- Noake, Wheeler, Clough Co. varnish factory at the east end of the site on 1906 Sanborn Fire Insurance maps.
- The Lake Shore Foundry on the south central portion of the site on 1891 Rascher Fire Insurance maps.
- A Commonwealth Edison substation near the northcentral part of the site on the 1950 Sanborn Fire Insurance maps.

The adjacent property to the east (Lindsay Light II site) was found in previous investigations to contain thorium-impacted soil. The property to the west (161 East Grand) was formerly occupied by the company involved in the manufacturing which used the thorium material. The USEPA requested permission to screen the subject site to see if there were any indicators of thorium contamination on the subject property. An initial screening on February 29, 2000 identified several areas which exhibited gamma radiation levels above background levels. Samples were obtained March 1, 2000 for gamma spec analysis to characterize the radioactive material.

This Work Plan describes the survey methods which are proposed for identifying the thorium impacted materials. Additionally, this Work Plan describes the survey methods proposed to monitor the excavation phases of the construction in order to identify and appropriately manage any thorium impacted soil encountered. Efforts to screen soils removed from the site to six disposal sites are also described herein.

Mr. Richard G. Berggreen, Principal Geologist with STS will be Project Coordinator. Mr. Dumas Guerrier, Senior Environmental Technician with STS, will be Field Team Leader. Stan A. Huber Consultants, Inc. will be the Health Physics Subcontractor. Radiation laboratory services will be provided through Radiation Safety Services, Inc.

Construction for this project began with the stripping of the asphalt parking lot. Several pier foundations for an overhead roadway were removed from the southwest corner of the site. Several caisson test pit probes have been excavated to investigate for obstructions. Excavation spoil soil piles are present on site as well as staged caisson casings. Construction activities were temporarily halted upon the discovery of the elevated radiation on February 29, 2000.

It is the intention of this Work Plan, upon approval by USEPA, to proceed with the site survey, identify and remove the thorium contaminated soil, resume the construction excavation operations and provide concurrent monitoring, with any additional contamination removed to clean limits when it is identified. Upon completion of all required excavation and removal of all identified thorium impacted soils above the proposed clean-up threshold of 7.1 pCi/g, the owner will request a closure document from USEPA representing the clean-up meets appropriate levels to be protective of public health and the environment.

Section 2.0 of this Work Plan describes the proposed development and excavation. The anticipated schedule and sequencing is also described.

Section 3.0 presents the proposed monitoring to be conducted. This monitoring includes the initial site survey and screening in the course of removal of identified contamination, and the monitoring to be conducted as construction excavation proceeds.

Section 4.0 summarizes the air monitoring, personnel monitoring, health and safety training, and required equipment screening before leaving the site.

Section 5.0 describes the closure documentation which will be prepared upon removal of all identified thorium impacted soil from the site.

2.0 PROPOSED DEVELOPMENT, EXCAVATIONS, SCHEDULE, SEQUENCING

The Grand Pier Center site consists of three areas which will have separate and distinct development and excavation activities. Area A, farthest west (Figure 1), will be developed as a high-rise in a future development phase. Area B, at the center of the site, will have a one-story deep basement, excavated 15 feet below street grade. Area C, at the east end of the site, is proposed to be slab-on-grade. Caissons will be drilled throughout the site (Figure 2). Area C will also have grade beams between caisson caps (Figure 3). Additionally, an upper level roadway supported on piers and caissons will be constructed over Illinois Street along the south side of a portion of the site (Figure 4, 5).

Site development is anticipated to proceed through the following tasks:

- Strip asphalt and sub-grade gravel (completed Areas B, C; pending Area A)
- Remove piers and footings for overhead roadway (begun)
- Test pit probe caisson locations for obstructions (begun)
- Excavate site in basement for caisson drilling (begun)
- Drill caissons
- Excavate for grade beams, caisson cap construction
- Construction of grade beams, caisson caps, basement walls and backfilling
- Installation of subgrade utility corridors
- Illinois Street viaduct caissons

As contamination is detected, either in the initial surface survey or in the course of monitoring the excavations, the areas will be designated with a magenta and yellow rope and stakes or fence posts. These areas will be designated exclusion zones, and will require appropriate personal protective equipment (PPE) and personal air monitoring to enter. All equipment and personnel which enter an exclusion zone will need to be frisked clean upon leaving the exclusion zone. Personnel entering exclusion zones must be 40-hour health and safety trained.

Restarting the construction activities at the site in coordination with the contamination removal efforts will involve close coordination so as to minimize interference and unnecessary delay. It is anticipated the activities will proceed as follows. Specific details on each activity are presented in Sections 2.1 through 2.8.

The first effort will be to clear all identified contamination locations in Areas B and C, based on the surface survey data. This removal effort will not include the locations currently obstructed by material and equipment, for example under the caisson casings at the southeast corner of the site. Those areas will be monitored and soil removed as equipment and material can be moved in the normal course of construction. Where contamination is identified but removal is delayed due to obstructions or sequencing of excavation activities, there is concern for equipment and personnel coming into contact with that soil and possibly spreading or increasing exposure potential. To minimize that potential, those areas which will not be isolated as exclusion zones and which may remain unexcavated for

some time will be marked by spray paint and covered with plywood so as to prevent contact with equipment and/or construction personnel. Those areas shall be excavated to clean limits as soon as practical.

After all identified contamination in Areas B and C has been removed, caissons will be installed in Area C, while test pits are excavated in Area B. Caissons will be installed in Area B as grade beams and caisson cap excavations are completed in Area C.

The basement excavation will be completed in Area B. Area A will be stripped of asphalt, the soil screened and any identified contamination removed, and caissons will be probed and drilled. Caisson cap excavations will be completed for Area A and along Illinois Street. Note that the Illinois Street viaduct caissons, in that they are off-site, may be installed concurrently with one or more of the on-site activities.

2.1 Strip Asphalt, Remove Subgrade

The site paving and subgrade have been removed. This facilitates surveying of the soil to more effectively identify elevated gamma radiation (Section 3.0 describes the proposed screening methods). This removal has already been completed on Areas B and C. Area A will not be stripped until Phase II is scheduled to begin construction.

2.2 Remove Piers and Footings for Overhead Roadway

The overhead roadway above Illinois Street at the southwest corner of the site extended into the airspace above the site. This roadway was supported on three piers on the site. The site airspace portion of the road has been removed and the piers taken down. The footings for the piers are in the process of being demolished in excavations on the order of 6 feet deep. Excavated soil and debris from those demolished footings remains adjacent to the excavations. The excavation, excavated soil, and debris will be scanned for contamination (Section 3.0).

2.3 Test Pit Caisson Locations

In order to locate and remove potential obstructions from caisson locations, each location will be explored by excavating a test pit to the natural soils. Any former structure or demolition debris obstruction will be removed and the location backfilled before the caisson is drilled. These test pits provide an opportunity to screen the fill soils for evidence of contamination (Section 3.0). Any contamination encountered will be removed to clean limits before backfilling.

Several locations have been excavated and remain as depressions on-site. Other locations remain to be excavated. Any that have been excavated and backfilled will be screened for potential contamination as the caissons are drilled.

2.4 Excavate Basement Area (Area B)

The area comprising the middle of the site, Area B, will be excavated for a one level basement. It is understood that the north wall will likely be sheeted to provide for complete excavation, while the remaining sides will be sloped soil. This area is to be partially excavated prior to installation of caissons in this area. This excavation will extend part way through the urban fill soils to a depth of approximately 5 feet, whereas the fill ranges from 7 to 9 feet deep below original site grade. That fill is underlain by fine to medium sand, with a trace of silt and gravel. Groundwater is typically 13 feet deep.

This excavation can be screened for contamination as it is extended (Section 3.0).

2.5 Drill and Install Caissons

Current site development plans show 117 caissons will be installed in development of Areas B and C. Each caisson location will have been screened for contamination as the obstruction test pit exploration was conducted, or if excavated and backfilled before screening began, those caissons will be surveyed by screening the cuttings as the upper portion of the caisson is drilled (Section 3.0). As a result, the caissons can be drilled without constraint, on the condition that the remediation of any contamination encountered in the test pits proceeded to clean limits. If contamination extends below the fill soil and sufficiently far into the natural sand soil so as to preclude removal before the caissons are installed, caissons at those locations will require screening of the cuttings through any soils continuing to exhibit contamination (Section 3.0). This limit of practical excavation prior to caisson installation is anticipated to be at the groundwater table, estimated at approximately 13 ft below grade.

2.6 Excavate for Grade Beams and Caisson Caps

In Area C, the foundation system includes a network of grade beams spanning between caisson caps (Figure 3). These grade beams are constructed in trenches excavated an estimated 5 to 7 feet deep. These trenches offer an opportunity to explore along those alignments for contaminated soil. Note that given the spacing of the grade beams and excavations for caisson caps, the majority of Area C will be excavated to 5 feet at a minimum and to 7 feet along the grade beam and caisson cap locations.

Excavations will also be required at the top of each caisson for construction of a cap. The location may have been previously screened in the course of test pit exploration and would therefore not require additional monitoring. Where test pits for obstructions were conducted before monitoring began and as a result screening at those locations was not previously conducted, the soil will be screened as the caisson cap excavation proceeds (Section 3.0).

2.7 Construction and Backfilling

After the grade beams and caisson caps are constructed, the lower level slab and street level floor slabs can be poured and basement walls constructed.

The excavations exterior to the basement walls will be backfilled. The excavated trenches in which the grade beams were constructed will be backfilled. Any subsurface corridors which will be excavated for underground utilities can be screened for potential contamination at this time, when the site is returned to a uniform grade. No further excavation or monitoring is anticipated to be necessary after this point in the construction schedule.

All backfill for this site must meet one of two criteria. If the backfill is "clean" fill from on-site, it must be below 7.1 pCi/g total radium. If the fill is from off-site, it must be 3.7 pCi/g or less total radium.

2.8 Illinois Street Viaduct Caissons

An upper level roadway will be constructed over a portion of Illinois Street (Figure 4). This roadway will be supported on piers whose foundations are caissons drilled and constructed through the sidewalk adjacent to the right-of-way of Illinois Street (Figure 5). A total of 13 caissons are proposed to be installed, 7 on the south side of Illinois Street and 6 on the north side.

This work will involve drilling a 36 inch diameter caisson. The caisson will be drilled to a depth of 80 feet, will penetrate the urban fill which underlies this area of Chicago to a depth of approximately 8 - 10 feet, the natural sand present to a depth of 20 to 28 feet, generally getting deeper to the east, and into the glacial hard pan clays which extend to bedrock at greater than 100 feet deep. A boring plan and boring logs for geotechnical borings in Illinois Street and adjacent Grand Pier Center are included as Attachment 2.

The caissons will be drilled directly from the street level. The sidewalk will be cut and removed at each caisson location. The soil beneath the sidewalk will be surveyed and any contaminated material removed to the limits of the removed sidewalk opening. Any remaining contamination not removed in the course of excavation and construction will be identified to USEPA for an ongoing record. No other excavation, other than removal of existing sidewalk and identified contamination, will precede drilling. Subsequent construction of the caisson cap will entail excavation of a temporary opening 8 feet square and approximately 5 feet below street grade. That work will also require monitoring, as described in Section 3.0.

Cuttings from the caisson drilling will be brought up on the caisson auger flights, screened for radiation while on the augers as specified in Section 3.0, and spun off for loading and transport. Soil exhibiting evidence of contamination be spun off in a separate area from apparently clean material.

Upon completion of the drilling, the reinforcing steel will be placed in the drilled hole and concrete placed to complete the caisson. There will be no contact with soil except that which is brought up on the auger flights, until the area around each caisson top is excavated for construction of the caisson cap.

At that time an 8 foot square area will be saw cut around each caisson. Sidewalk, curb, gutter and street pavement will be removed and the soil screened for contamination. After removal of any contaminated soil, the remaining clean soil will be excavated to a depth of 4.5 to 5 feet deep, using a small hydraulic excavator and hand digging. Forms will be constructed for the caisson cap. Reinforcing steel will be placed and the concrete poured. The forms will be removed and granular material, CA-6 or equivalent, will be used to fill the excavation, and the area will be re-paved.

3.0 PROPOSED CONTAMINATION SCREENING

Contamination screening for thorium-impacted soil will occur in two stages. The current site grade will be surveyed for evidence of elevated gamma radiation. Certain materials present on the site will need to be relocated to allow surveying, for example, the caisson casing stored near the southeast corner of the site. Also, some of the soils stockpiled will need to be screened, as described in Section 3.1.

The second stage of screening will be done in the course of site excavations. These excavations are anticipated to include:

- Overhead street pier excavations
- Test pits for caisson obstructions
- Caisson drilling
- Basement excavation, Area B
- Grade beam trenches
- Utility corridors
- Illinois street viaduct caissons
- Off-site soil screening

The monitoring of these excavations is described in Section 3.2.

3.1 Surface Grid Survey

The currently exposed soil surface will be surveyed for elevated gamma readings. The survey will proceed to cover the exposed soil on survey lines spaced 5 meters. Gamma count values shall be taken at intervals spaced 5 meters (5 x 5 meter grid). The site grid will be marked by stakes and flagging at the edges of the property and by paint on the ground surface on the interior of the site. The areas between the grid points will be scanned following Lindsey Light II Scoping and Planning (S&P) Documents SOP 210-1 so as to cover the intra-grid areas.

The excavated soil which is present on-site in stockpiles will be screened for elevated radiation before it is removed from the site. Screening will be done by surveying the exterior of the pile and removing the soil in maximum 2 ft lifts. Efforts will be made to avoid mixing and homogenizing the soil as it is excavated. All soil exceeding the apparent 7.1 pCi/g clean-up threshold will be managed as thorium contaminated soil.

The surveys will be conducted using a 2 x 2 NaI gamma detector (Ludlum 2221 or the equivalent alarm feature Ludlum instrument). The detector will be unshielded to provide for broader area screening in assessing the surface survey. Values will be recorded in counts per minute (cpm). Screening records will include recording the instrument serial number, calibration date, operator, and site grid coordinates surveyed.

The maximum value will be recorded for each grid cell and all anomalously high areas (2 times background) will have the approximate limits designated on the survey data sheets.

Locations with elevated gamma counts will be marked and the vicinity surveyed at a 1 meter grid spacing to identify the limits of the elevated readings. Those areas will be designated as contaminated zones and soil removed. Verification sampling and analyses will be conducted as specified in this Work Order (Section 5.0).

3.2 Construction Excavation Screening

Soil screening in the course of construction is intended to identify contamination which may otherwise be masked by overlying soil, but would be exposed and transported off site in the course of construction excavation. As with the Surface Grid Survey, when survey results find evidence of thorium contamination, the area will be determined and the contaminated soils removed to the limits of the cleanup criteria of 7.1 pCi/g.

All verification of clean closure will be based on gamma spec analysis of samples run at an on-site laboratory. Analysis will be conducted using detectors and NUTRANL software capable of meeting the detection limits to support the 7.1 pCi/g clean-up determination. Replicate split samples will be run by USEPA as a confirmation. However, upon demonstration of the on-site laboratory capability, field screening results will be checked by analysis at the field laboratory as excavation proceeds, and the field laboratory results will be used to request closure from USEPA representatives.

A cross check series of 10 samples collected from the site will be split and analyzed at the on-site laboratory and through USEPA at Argonne National Laboratory. These samples will provide a comparison of results to allow the on-site laboratory to be used as the closure verification analysis.

The following provides a description of the screening conducted for each of the anticipated excavation types.

– Overhead Street Pier Excavation

These excavations already exist at the site. The excavations are approximately 12 x 12 feet in horizontal dimension and 7 feet deep. Minor additional excavation may be necessary to remove foundation remnants. However, these excavations are near their final size and can be screened. The walls and floor will be screened in accordance with Section 5 of this Work Plan and any materials exceeding the clean up criteria of 7.1 pCi/g will be removed. Removal will extend to clean limits or the property boundary and be subject to verification screening by the USEPA and confirmation samples to be laboratory analyzed. Excavated soil and debris will require screening prior to removal off site. Screening will require the excavated material which is present on-site be less than two feet thick to be covered by a walk-over survey. Piles greater than two feet will be excavated in lifts of a maximum of two feet and screened after each lift. Efforts will be made to minimize mixing and homogenization during excavation.

– *Test Pits for Caisson Obstructions*

Test pits to remove potential obstructions have been or will be excavated with hydraulic excavator at each caisson location. However, in Area B, if no obstructions are apparent, based on field observations and boring logs, test pits may be omitted. The test pits will extend through the fill soils and basement floors which may be present based on boring logs from Area C at this site. Depth to natural soils varies from 7 to 9 feet. Test pits will be monitored by screening the soils as they are excavated, and by screening the in-place soils in the walls and floor of the test pits. All soils exceeding clean up criteria will be removed from the site.

All of the caisson locations in Area C were previously excavated for obstructions. Approximately one quarter (17 of 65) of the locations in Area B have been test pitted. (See the following section and Figure 2A). Rather than re-excavating those locations, the caisson cuttings will be screened as the caisson is drilled.

When test pit monitoring identifies contamination which exceeds the cleanup threshold of 7.1 pCi/g, the contamination will be removed to clean limits before the test pit is backfilled and the caisson is drilled. The only exception would be if the contamination extended below the groundwater table or beyond the limits of the site.

– *Caisson Drilling*

At those locations where the test pits were excavated prior to initiation of screening (all caissons in Area C, and the following caissons in Area B: 6.5A through 14A, 6.5B through 8B, 12B, 6.5C, 7D, 11D and 12D, Figures 2A, 2B) the caisson drill cuttings will be screened. Screening will be conducted while the material remains on the auger. Material exhibiting readings 2 times background or higher will be spun off and surveyed on the ground. All material exceeding 7.1 pCi/g will be containerized and removed from the site.

Note that caissons at Column Station C-25 (Column No. 60) and Station C-22 (Column No. 57) have already been installed.

– *Basement Excavation - Area B*

The basement excavation in Area B has a design depth of 15 feet. Borings indicate fill extends to an estimated 7 to 9 feet below original site grade. This portion of the site will be monitored as the excavation proceeds, with excavation lifts limited to not more than 2 feet. Monitoring will continue to the base of the fill soils, or to a clean (less than 7.1 pCi/g) base, whichever is deeper. However, it is not proposed to extend the excavation below the design depth of the proposed basement excavation. This excavation limit is expected to be constrained by groundwater elevations at the site.

Should dewatering of the basement excavation in Area B be required, to either manage precipitation accumulation or groundwater infiltration, a permit will be obtained from the Metropolitan Water Reclamation District, and any required sampling and monitoring will be conducted and provided. Additionally, any permits required by the Chicago Sewer

Department will be obtained and any required sampling and monitoring will be conducted and provided.

– *Grade Beam Trenches*

In Area C of the site, which will be built slab-on-grade, the structure has a foundation consisting of caissons and a network of grade beams. These grade beams are constructed between caissons, in forms inside trenches excavated between the caissons. The trenches are approximately 5 to 7 feet below grade. This excavation will likely lower all of Area C to at least 5 feet deep.

As these trenches are excavated, the excavated soil will be screened and the walls and floor of the trench will be screened in lifts of not more than 2 feet between screening surveys. All soil which exceeds the clean-up criteria of 7.1 pCi/g will be removed from the site and clean closure documented in accordance with procedures in Section 5.0 of this Work Plan.

Area A will also be generally excavated to approximately 5 feet for construction of caisson caps. This will allow for screening and survey in maximum 2 feet lifts as this excavation proceeds.

– *Utility Trench Corridors*

Following the completion of the foundation elements, including the caissons, caisson caps and grade beams, it is anticipated that the basement walls will be formed and poured and the site will be backfilled around the grade beams and exterior to the basement walls. The final excavation before placing the floor slab at site grade will be excavating the underground utility corridors. Where those excavations pass through soil not previously screened clean, the excavation spoil and walls and floor of the trenches will be surveyed. Material exceeding the cleanup criteria will be removed to clean limits. Figure 6 identifies the utility tie-in locations proposed for the current development. Specifically, this figure shows where excavations at the margins of the site property will occur within the city right-of-way.

– *Illinois Street Viaduct*

All pavement removed, including sidewalk, curb and gutter, and street pavement will be screened for radiation in accordance with the methods proposed in the Highway Authority Agreement, to the same extent as if the Agreement applied to this location. (The Highway Authority agreement is provided on a separate document referenced herein.) Materials exhibiting readings indicative of levels exceeding 7.1 pCi/g will be handled as contaminated.

Soil will be screened on all augers returning cuttings from the urban fill and sand soils from the caissons. Material will be screened on the augers before it is spun off. If there are indications of elevated radiation, the material will be spun off onto an area underlain with plastic sheeting. The soil will be screened on the ground, and material exhibiting readings above the 7.1 pCi/g clean-up threshold will be loaded into Supersacks for disposal. All Supersacks will be either loaded directly into shipping containers or will be placed in a

secure location inside the locked perimeter fence of the Grand Pier site, pending off-site shipping.

Monitoring will be done with NaI detectors which have been calibrated to the 7.1 pCi/g standards at the Kerr-McGee West Chicago facility.

Documentation will include recording the apparent depth of any cuttings which exhibit anomalous results, that is greater than 2 times background. Records will also document the instrument and technician conducting the monitoring. Separate records will be made for each caisson boring.

– Off-Site Soil Screening

Initial construction activities resulted in asphalt, concrete and soil being removed from the site. That soil and material was not screened for potential contamination. In order to assess whether thorium contamination is present in that soil, the disposal sites were screened with a walkover survey.

Contact persons at the disposal sites (waste disposal landfills, asphalt recycling, concrete crushing facilities) were notified, requests made to identify where the material was placed, and an opportunity provided to conduct a walkover survey of the material. Representatives of USEPA and Health Physics contractors conducted the walkover. The surveys utilized calibrated gamma detection instruments. Samples for laboratory analysis were collected as necessary from areas exhibiting anomalous radioactivity. The results of those sample analyses will be provided to USEPA, and included in the final closure report.

4.0 AIR MONITORING, HEALTH AND SAFETY

4.1 Air Monitoring

Air monitoring will be conducted at two levels. Site monitoring will be conducted at the four sides of the site (north, south, east, and west). This air monitoring is for the purpose of documenting, and if detected, initiating measures to control off-site airborne contamination.

The procedures for site air monitoring are presented in attached SOP 212, Section 5.1.

Personnel air monitoring will be required for workers in an exclusion zone. Procedures for personnel air monitoring are presented in attached SOP 212, Section 5.2.

4.2 Health and Safety

The site survey and remediation oversight will be conducted in accordance with the attached Health and Safety Plan. This plan includes required training, personnel protection equipment, general work precautions, and medical monitoring among other issues. The Health and Safety Plan is included as Attachment 1.

All accidents or injury "near misses" will be communicated to USEPA representatives in a timely manner. Project safety briefings will be a regular part of project communication between the Field Team Leader and project contractors and subcontractors.

5.0 CLOSURE DOCUMENTATION

It is the objective of this Work Plan to provide for the removal of thorium contaminated soil from the Grand Pier Center site. Additionally, it is the objective to obtain from the USEPA agreement with the documentation that there is no evidence of residual contamination and that the site does not represent a risk to public health or the environment. It is the intention that this agreement be made with no deed restriction or constraint on future uses of the property.

5.1 Verification Sampling

Soil exhibiting contamination above the clean-up threshold of 7.1 pCi/g total Radium (Ra-226 + Ra-228) will be removed, placed on transport boxes as specified in the S & P documents, and shipped to a facility licensed to accept this waste. Initial field demonstration that the location has been excavated to clean limits will be made with a 2 x 2 NaI detector which has been calibrated against the calibration plates at the Kerr-McGee West Chicago facility. Samples will then be collected and analyzed at an on-site laboratory using NUTRANL software and gamma spec analyses.

Upon documenting clean closure, the USEPA representatives will be notified and provided results of the laboratory analysis. Release of remediated areas will require signed documentation by USEPA of their review and concurrence of the laboratory results for that area. It is understood that USEPA will obtain a sample for analysis at their contract laboratory. However, closure will not be required to wait for USEPA laboratory results, but will be based on the field laboratory results. It is noted that the use of the field laboratory for closure verification will be contingent on demonstrating agreement between the field laboratory results and results from USEPA's contract laboratory at Argonne National Laboratory.

Upon receipt of laboratory results documenting the verification soil samples are below the 7.1 pCi/g total Radium threshold, the location will be cleared for backfilling or continued construction activities as may be necessary.

5.2 Closure Report

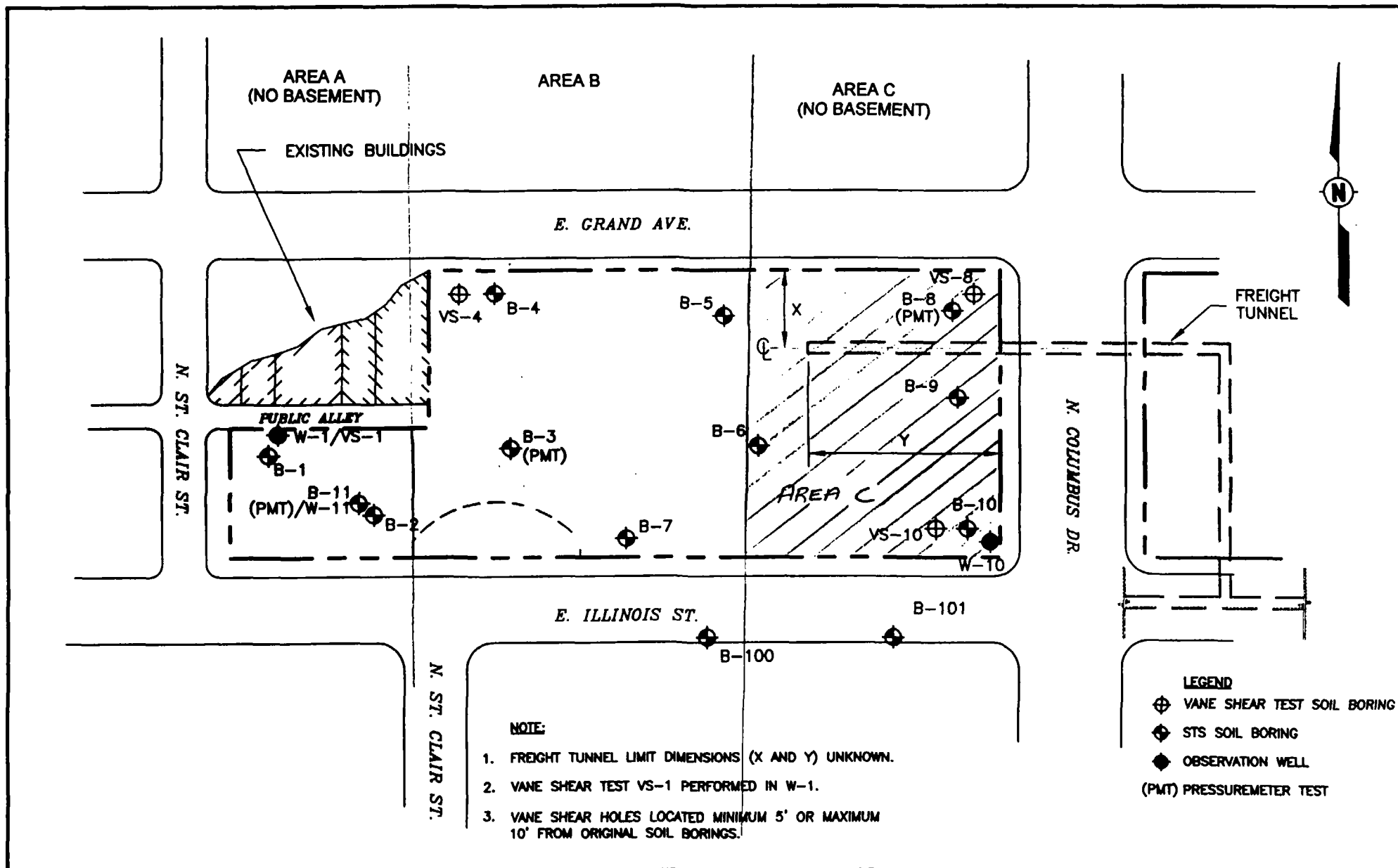
The closure documentation report will provide a summary of the locations remediated, the volumes of all materials removed and their disposal locations, resources allocated and costs for the removal, analytical results, field data documenting the clean closure, and an affidavit in accordance with the requirements of the UAO for the adjacent Lindsay Light II site, Section 24, Termination and Satisfaction. This closure documentation report will be provided within 60 days of the completion of the removal of all identified thorium impacted soil.

5.3 Material Disposal

Material which exceeds the clean-up criteria of 7.1 pCi/g will be managed for off-site disposal. Material including soil, asphalt, concrete, and urban debris fill which exceeds the clean-up criteria will either be loaded into Supersacks, if a sufficiently small volume is encountered at any particular location, or will be loaded directly into the shipping containers. Supersacks will be loaded into shipping containers before removal from the site.

The exterior of all containers will be surveyed clean before they leave the site.

Material will be disposed of at Envirocare in Clive, Utah. Kerr-McGee, LLC is responsible for arranging transportation and disposal. Shipping and placarding will be in accordance with all Department of Transportation regulations for shipping contaminated material.



**SITE PLAN AREA DESIGNATION
GRAND PIER CENTER
CHICAGO, ILLINOIS**



STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO.

24418-XK

STS PROJECT FILE

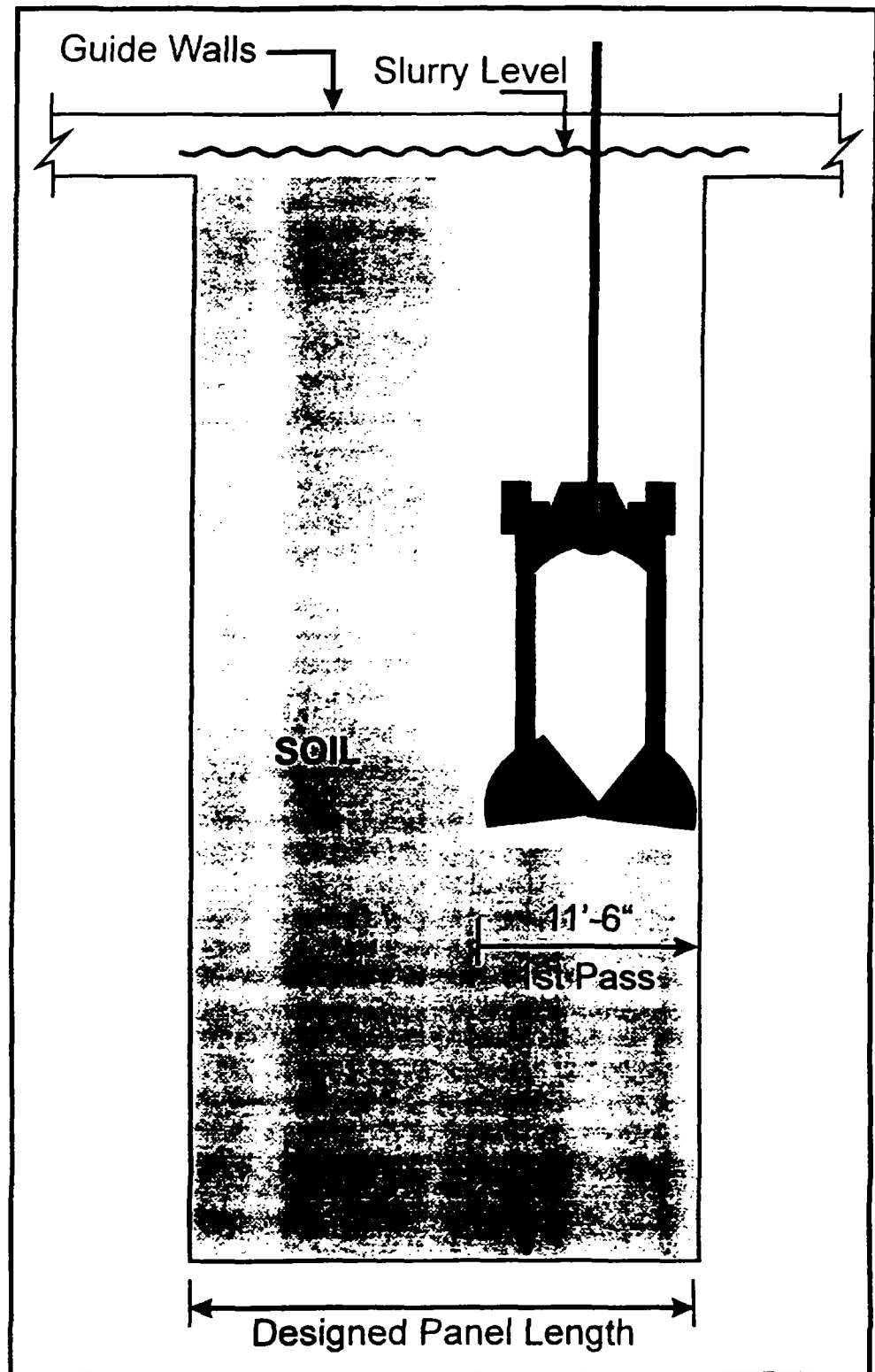
SCALE

1" = 100' ±

FIGURE NO.

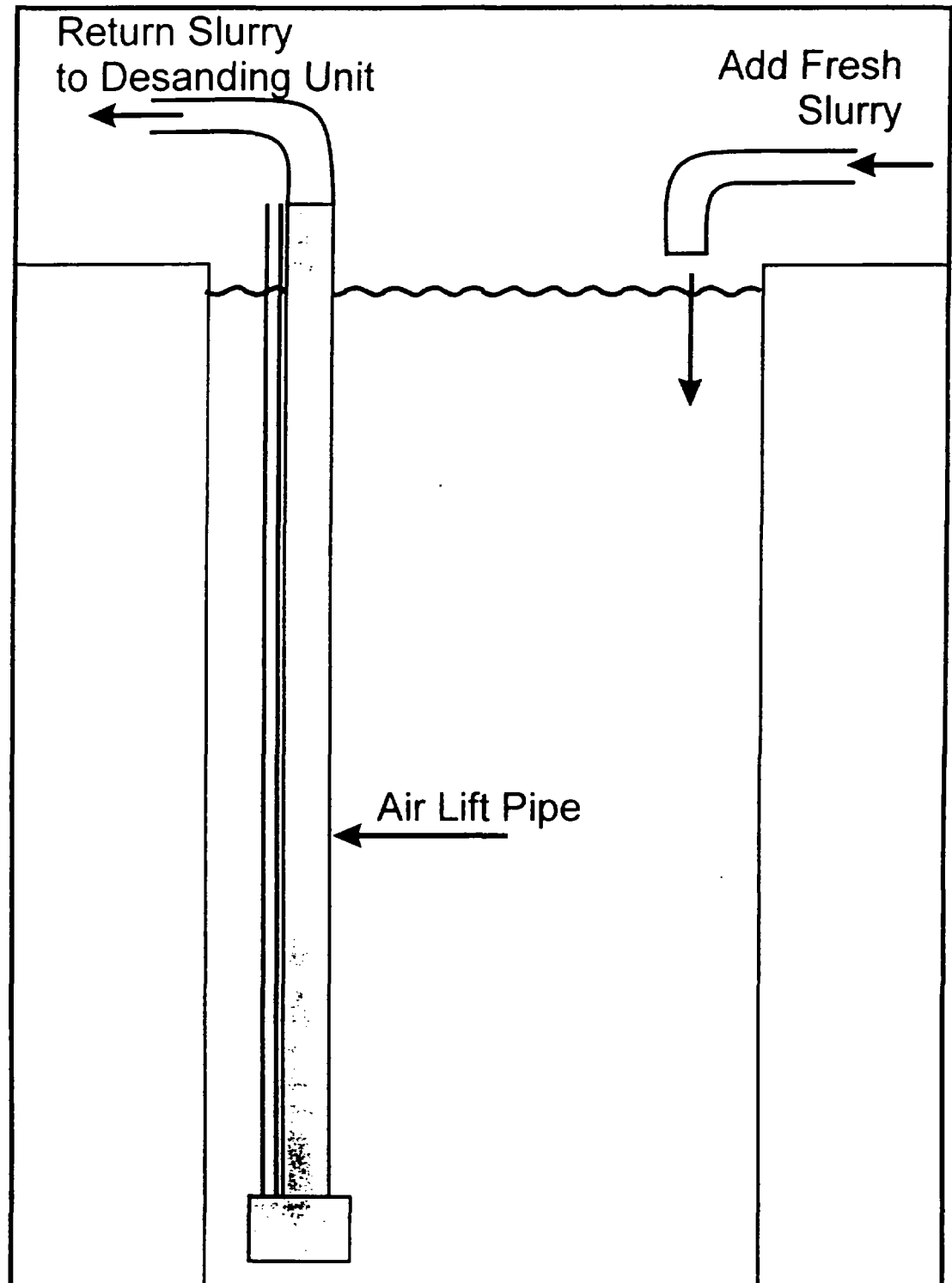
DRAWN BY	KKB	DATE	6-12-98
CHECKED BY	DR	DATE	6-12-98
APPROVED BY	WHW	DATE	6-12-98
CADFILE X: \PROJECTS\24418\ss\G1SS1.dwg			
06/15/1998 09:46			

1. Excavation of Panel



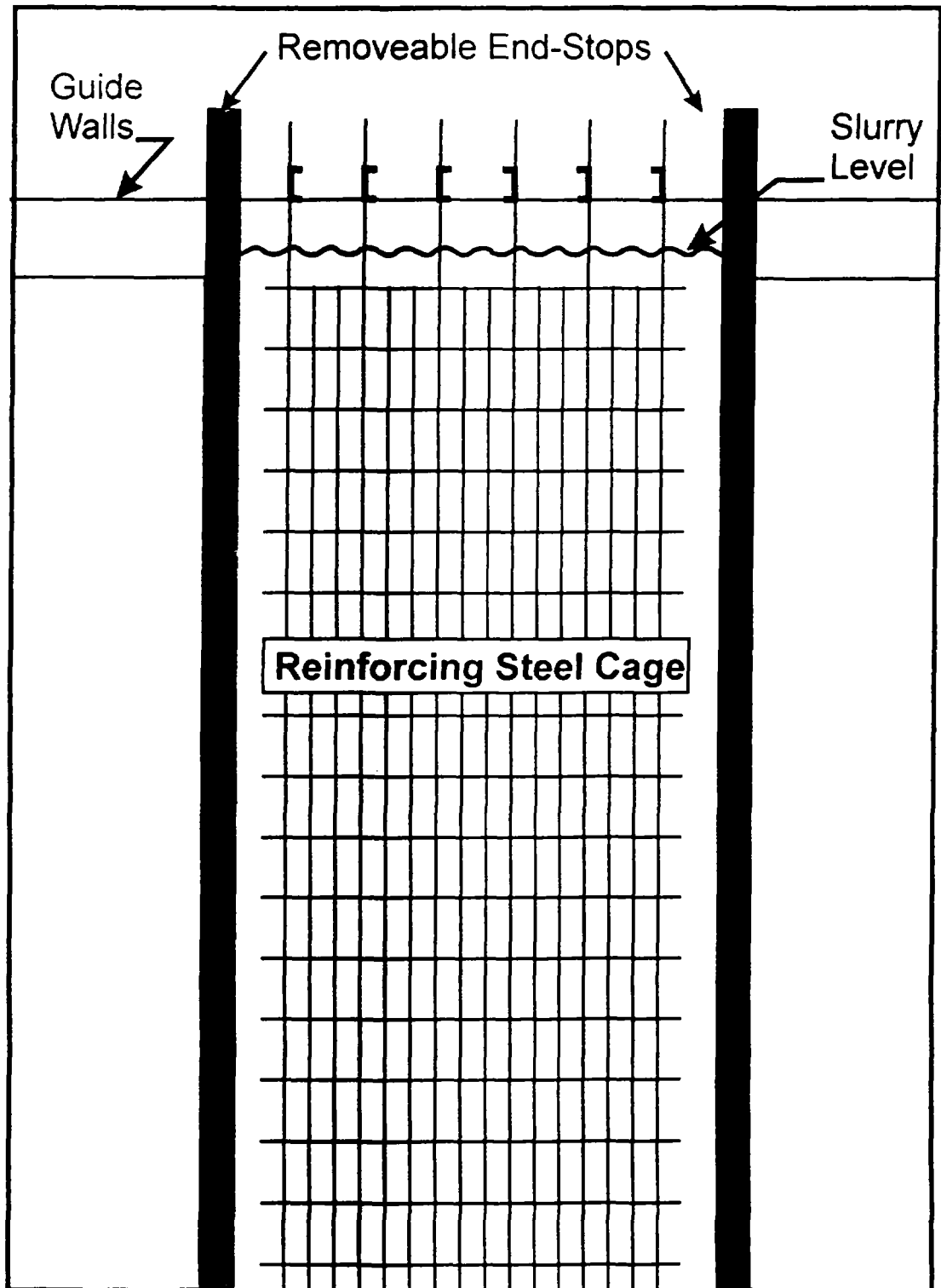
6/6/6
Bentley Systems

2. Cleaning Slurry After Excavation Is Complete

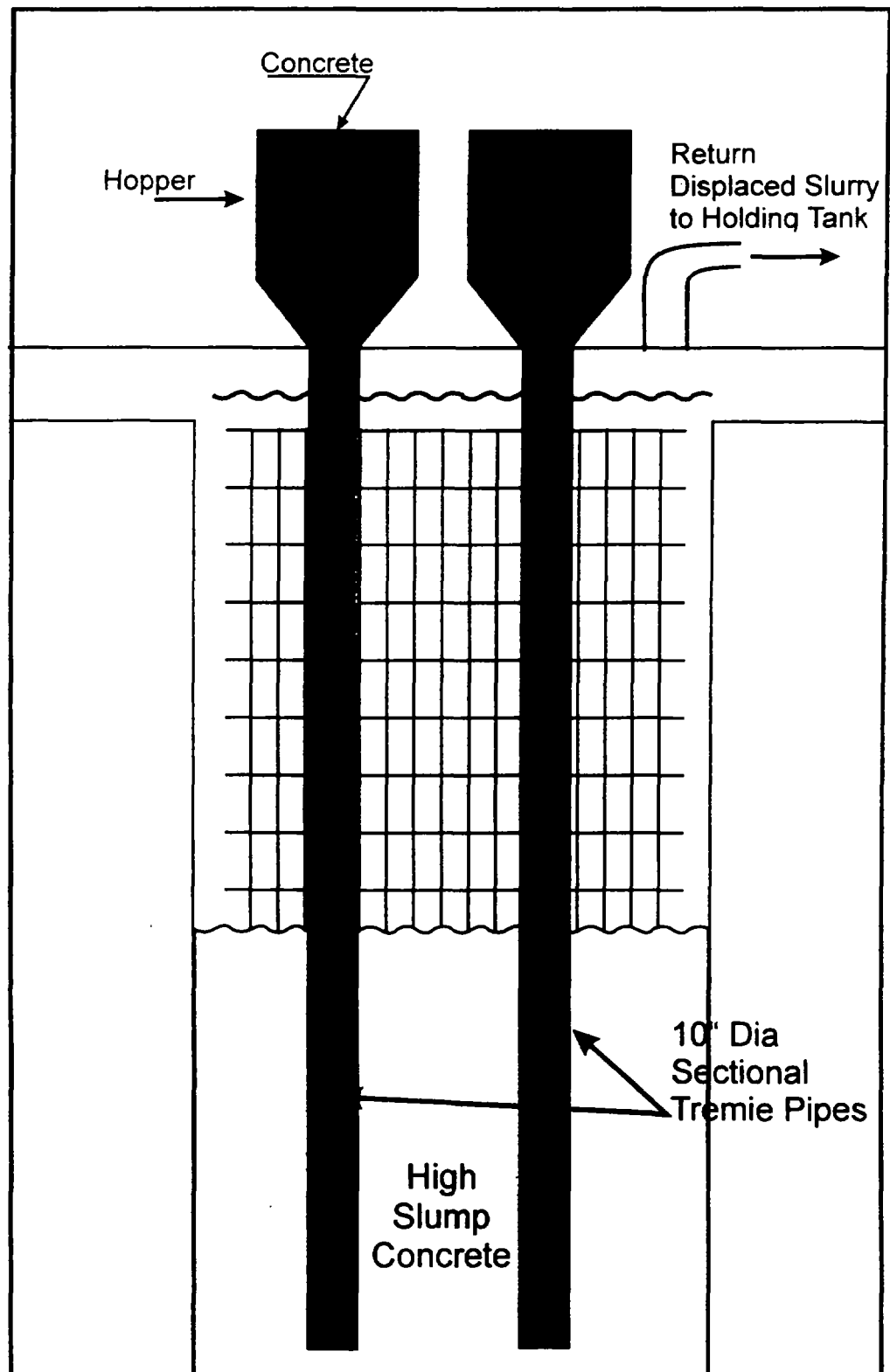


07/07/2007
10:00 AM

3. End-Stops and Reinforcing Steel Cage In-Place



4. Tremie Concrete Placement



ATTACHMENT 4

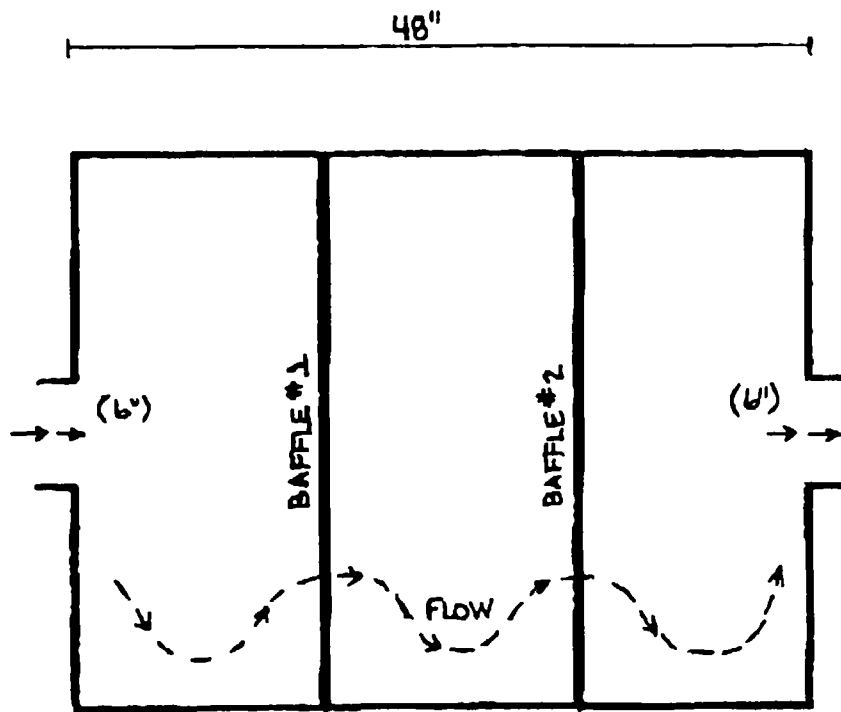
DEWATERING SYSTEM SCHEMATIC

300 GALLON SILT BOX

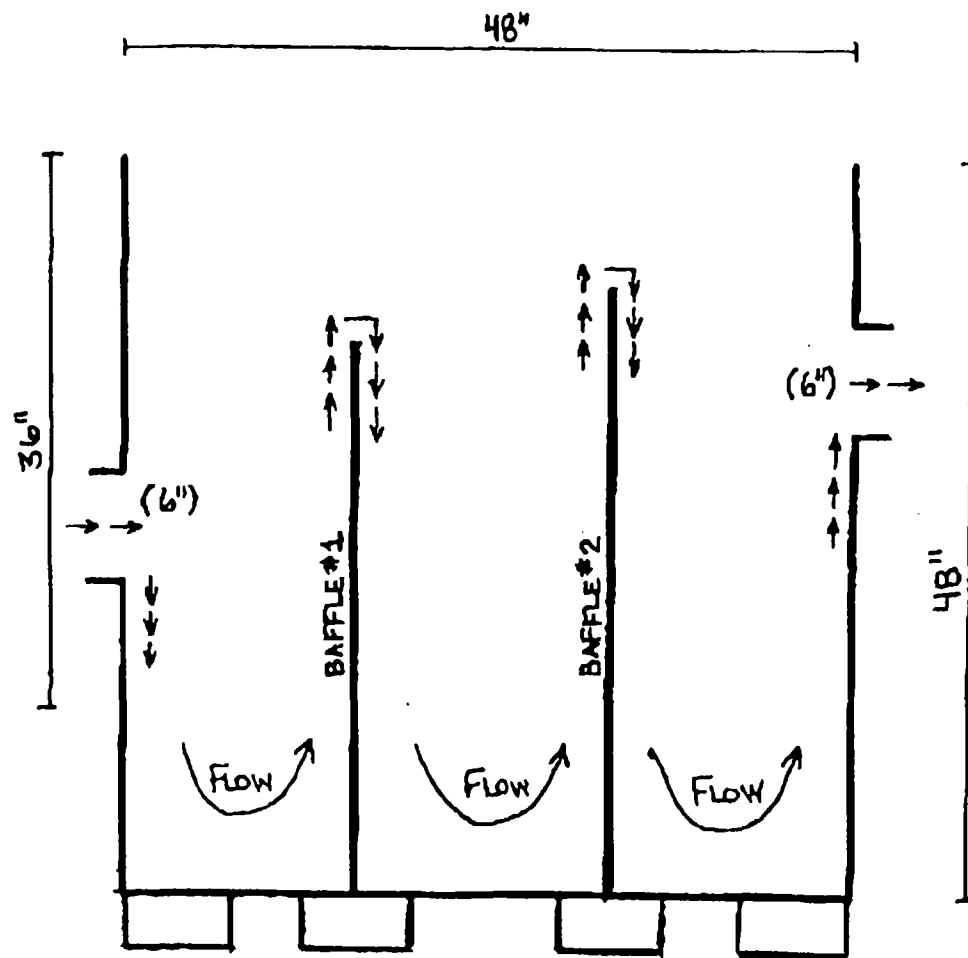
(WOOD CONSTRUCTION)

M I D W E S T
DEWATERING
C O M P A N Y , I N C .

1333 - 125th Street, P.O. Box 850
Hammond, Indiana 46325-0850
219/ 659-0009
FAX: 219/ 659-0027



TOP VIEW



SIDE VIEW

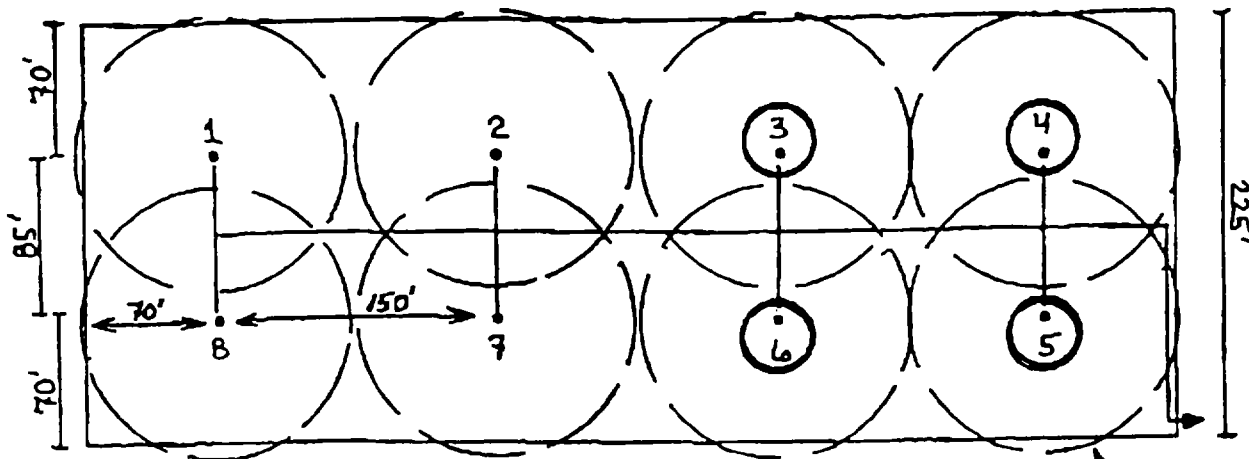
MIDWEST DEWATERING COMPANY, INC

1333 - 125th Street, P.O. Box 850
Hammond, Indiana 46325-0805
219/ 659-0009
FAX: 219/ 659-0027

— REVISED — RIVER EAST CENTER CHICAGO, IL

4 INITIAL PUMPS

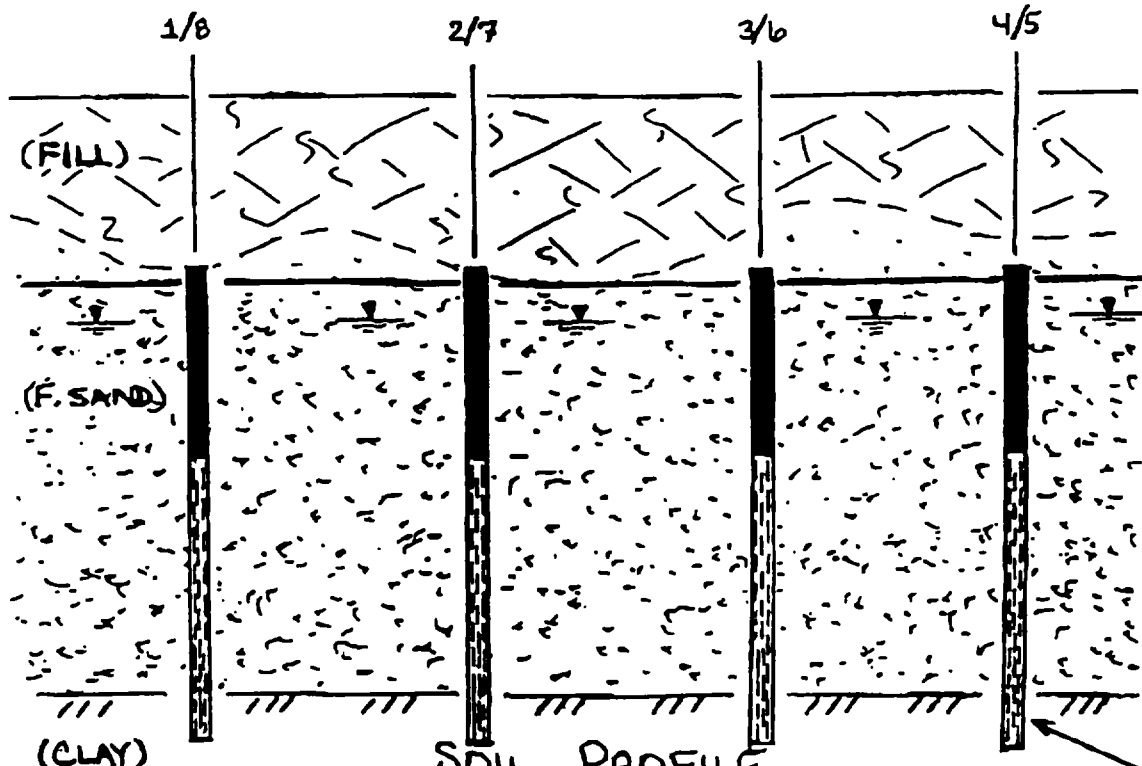
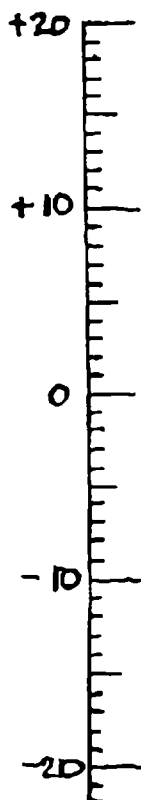
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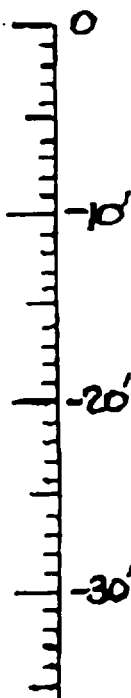
SITE PLAN
(1"=100')

APPROXIMATE
DRAWDOWN
INFLUENCE
PER CASING

CCD



DEPTH



SOIL PROFILE
(TYPICAL)

MIN. 3' INTO CLAY

ATTACHMENT 5

HEALTH PHYSICS SUBCONTRACTOR INFORMATION

Site Personnel and Intended Function

The following resumes are for additional staff that will be utilized during this project. Described below relates to the specific individuals and their intended function or expected tasks to be performed during the project. All individuals will have completed 40 hour HAZWOPER training before the start of excavation at the site.

NAME	TITLE	FUNCTION
Mike Van Der Karr	HP Site Supervisor	All Tasks
Eli Port	President, RSSI	All Tasks
Eric Pittman	HP Technician	Surface Surveys, Contamination
Glenn Huber	HP Technician	Removal Coverage, Daily
William Krueger	HP Technician	Instrument Checks, Smear Counter Operation
Jennifer Alore	HP Technician	Soil Lab Analysis
Desmond Cho	HP Intern	Surface Surveys, Site Support Outside of Exclusion Zones



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847-965-1999
Fax 847-965-1991

RSSI BACKGROUND INFORMATION

RSSI provides a wide range of health physics, industrial hygiene and environmental health services to clients throughout industry, business, government, medicine, education and law. Founded in 1976 as Radiation Safety Services, Inc., RSSI has expanded in response to client needs for additional high-quality professional services from a health physics consulting firm into a multi-service company that includes a radiological laboratory as well as industrial hygiene and environmental health services. The quality of its professional services has led to RSSI's providing program management and staffing for two of the Fortune Top 10 companies and for two of the four largest not-for-profit research institutions in the United States. RSSI provides program support to many other organizations including major corporations, not-for-profit research and academic institutions, and governmental agencies. RSSI's professional staff includes Certified Health Physicists, Certified Industrial Hygienists and Registered Professional Engineers.

HEALTH PHYSICS SERVICES

Health physics is dedicated to protecting man and the environment from unnecessary exposure to radiation. RSSI uses established management techniques when working with clients to ensure that they use radioactive materials and other sources of ionizing and non-ionizing radiation in accordance with applicable regulations while eliminating unnecessary program activities. This approach results in maximum regulatory compliance, lower exposure to radiation and reduced costs, thus meeting basic radiation safety goals while saving money.

Auditing Programs RSSI audits radiation safety programs for compliance with state and federal requirements including license conditions. Clients learn what they can do to prevent unnecessary items of noncompliance during inspections while improving the protection of their personnel and the public. They also learn how to simplify their radiation safety programs to make them easier to manage and more cost-effective.

Licensing RSSI works with clients to obtain licenses without unnecessary commitments and complicated monitoring requirements. Clients gain licenses that allow them to create workable radiation safety programs that serve their needs while providing for necessary safeguards.

Managing and Staffing Programs RSSI is the leading source of professionally staffed radiation safety programs in the Midwest. Clients include educational institutions, hospitals and industrial operations. RSSI's manpower ranges from technicians who perform routine activities to Certified Health Physicists who handle complex technical and administrative problems.

Managing Radiological Emergencies RSSI's professionals are available 24 hours a day, seven days a week to provide expert guidance and manpower in emergencies. Emergency response activities have included management of contamination resulting from the inclusion of cobalt-60 in cast iron products from Juarez, Mexico; radium contamination of aluminum; contamination of copper with accelerator produced material, and contamination of factories processing materials with the potential for uptake by humans with polonium-210. RSSI performed electron microscopy analysis of polonium-210 microspheres to determine if a respiration hazard exists. RSSI is licensed to provide emergency response.

Training RSSI trains clients' employees to work safely with radiation hazards. Unnecessary exposure and risk are minimized while complying with regulatory requirements. Training is directed at both the level of hazard and individual requirements based on job description. Training programs can be either general or task oriented.

RADIOLOGICAL LABORATORY

RSSI's radiological laboratory performs alpha and beta analyses, high resolution gamma spectroscopy and other services. RSSI analyzes leak test, bioassay and environmental samples. RSSI also calibrates and repairs survey and counting instruments. RSSI is a secondary laboratory for exposure rates from 0.1 mR/hr to 50 R/hr and provides clients with rapid turnaround. All calibration and analytical services are traceable to the National Institute of Standards and Technology and ANSI and are licensed and approved by regulatory agencies.

RADON SERVICES

Indoor radon is the nation's most serious radiological health hazard. To meet governmental and consumer needs for accurate radon-220 and radon-222 measurements and technical information on mitigation, RSSI added radon services to its health physics capabilities. RSSI was asked to assess radon hazards and risks under a contract funded by the U.S. Environmental Protection Agency. RSSI supplies alpha-track monitors to organizations, governmental agencies and individuals who wish to monitor radon levels in buildings, performs monitoring prior to real estate transactions, and advises local governments and industry in building techniques to reduce radon concentrations in future construction.

INDUSTRIAL HYGIENE SERVICES

Industrial hygiene and occupational health protect the worker on the job from biological, chemical, physical and mechanical hazards. Employers are becoming increasingly aware that protecting workers is an ethical and economic responsibility. At the same time the increasing complexity of workplace hazards calls for ever greater knowledge and skill in developing solutions. RSSI performs industrial hygiene hazard assessments and makes recommendations to ensure compliance with Occupational Safety and Health Act (OSHA) Standards. RSSI emphasizes engineering controls as the best approach to worker protection. The quality and objectivity of RSSI's professional activities have resulted in RSSI being selected as a technical expert by both plaintiffs and defendants in litigation.

Organizing and Administering Industrial Hygiene and Safety Programs RSSI develops specialized programs to focus on specific workplace hazards or a comprehensive program that deals with a wide range of workplace hazards. RSSI has supplied industrial hygiene programs to federal agencies in ten states. These programs covered indoor air quality, worker protection, chemical storage, and asbestos, as well as support for specific complaints that occur at individual locations.

Training Training for management personnel emphasizes the need to follow regulations and to protect workers. Worker training expands on the worker's need to protect the health and safety of himself and others if engineering controls fail.

Developing Respiratory Protection Programs When workplace contaminants exceed OSHA-specified levels, respiratory protection programs are required to protect workers from exposure to airborne contaminants. RSSI establishes policy and specifies respirators as well as providing training and qualitative fit-testing for respirator use. RSSI also helps clients meet record-keeping requirements that include proof of being fitted and proof of medical examination.

Writing Specifications for Industrial Hygiene Projects Clients who have the skills to protect employees from everyday operating hazards may still want specialized assistance for major one-time projects such as asbestos abatement. RSSI writes specifications based on current regulations and assists in contractor selection. RSSI also monitors contractor performance for clients to ensure that work is performed in accordance with specifications.

Analyzing Industrial Hygiene Samples Regulated by the Nuclear Regulatory Commission Part 29 CFR 1910 requires monitoring of the work environment for asbestos and other hazardous materials. Timely and accurate analysis is essential to protect workers and satisfy regulatory requirements. At no time is this more important than during decontamination and decommissioning of nuclear power plants when exposure to hazardous materials is probable. Parts 10 CFR 20, 40 and 70 require that regulated material be transferred only to a licensee. This has meant that quality analysis of samples from restricted areas by an AIHA-accredited laboratory was impossible. RSSI is licensed by the NRC to collect and accept industrial hygiene samples from restricted areas. RSSI provides analysis by a licensed, AIHA-accredited laboratory for industrial hygiene samples that may contain source, special nuclear or by-product material. This enables clients to monitor industrial hygiene hazards in licensed facilities as thoroughly as radiological hazards are monitored.

Investigating Accidents RSSI performs detailed accident investigations to determine what occurred, what equipment or materials were involved, what caused the accident and what can be done to prevent recurrence.

Correcting Items of Noncompliance Cited by OSHA RSSI works with clients to correct OSHA items of noncompliance in a cost effective manner.

ENVIRONMENTAL HEALTH SERVICES

Environmental health protects the public and the environment. Health physics, Industrial hygiene and environmental health activities frequently overlap. The on-the-job hazard becomes environmentally important when it is released to the environment and becomes subject to environmental laws such as NESHAPS, TSCA, CERCLA and SARA.

RSSI assesses current hazards and the potential for future exposure to hazards and associated liability. Federal and state laws hold property owners liable for hazards created and released by previous owners as well as by themselves. Examples of RSSI's services in this area include research efforts to discover environmental impairment on property considered for acquisition to reduce or eliminate exposure to future liability. RSSI researches prior land and building use and performs sampling for environmental contaminants.

ADDITIONAL INFORMATION

RSSI's offices and laboratories are at 6312 W. Oakton Street, Morton Grove, IL 60053-2723. If you would like more information about RSSI's services, please call 847-965-1999.

ELI A. PORT

Citizenship: USA

Security Clearance Granted: Secret

CURRICULUM VITAE

Employment:

1976-

RSSI, Morton Grove, Illinois.

Founder and President of a health physics, industrial hygiene and environmental consulting firm specializing in regulatory affairs and government liaison, in developing and applying modern, cost-effective management techniques. Managed and staffed institutional radiation safety and industrial hygiene programs including a leading research institutes, major corporations, universities, medical centers and government agencies. Developed laser safety programs. Member, Technical Advisory Committee to the Illinois Department of Nuclear Safety (IDNS) Low Level Radioactive Waste Management Program. Developed combined Radiation Safety Program for licensed activities on a dual use US NRC licensed/US DOE contracted site. Health physics supervisor for decontamination of 27-acre site contaminated with source material. Characterized a 60-acre mixed waste site. Provided technical support for a government intervention on major radioactive and mixed waste National Priority List sites. Developed alternative compliance program accepted by US EPA to demonstrate national compliance with 40 CFR 61, Subpart I. Served on City of Chicago Hazardous Materials Consultants Committee. Designed shielding for clinical facilities and 10 MeV electron beam accelerator. Performed radiological safety evaluations for the world's largest production cyclotron. Designed and assembled nuclear utility and secondary laboratory calibration facilities and developed QC/QA Plan for laboratory accreditation.

1997-

Illinois Institute of Technology, Chicago, Illinois.

Research Associate Professor

Co-Direct Master of Health Physics Program combining traditional technical content with courses in law, management and communication. Designed advanced degree program for professionals in government, industry, and universities with courses available via the internet.

- 1996- Northwestern University, Evanston, Illinois.
Team Leader CPD 243, Compliance With Radiation Regulations
- 1989- Adjunct Assistant Professor in Environmental Health Engineering.
- 1983- Instructor in CPD 240, Radiation Safety.
Lectures on detection and measurement, licensing and regulation of radiation hazards.
- 1976- Lecturer in 720-C65 Series, Radiological Health.
- 1973-1976 Director, Center for Radiation Safety.
Coordinated a multi-institutional program for two campuses and six affiliated clinical and research hospitals serving 1,000 occupationally exposed employees working with 200 radioisotope labs, four accelerators, a reactor and 150 machine sources of radiation. Responsible for legal and administrative aspects of the program under broad research and medical, special nuclear material, source material, and cobalt teletherapy licenses. Started a comprehensive dosimetry program with a 50 percent cost reduction. Developed a computerized inventory control. Designed and implemented a radioactive waste handling system to effectively eliminate personnel injury and contamination. Started a round-the-clock radiological emergency response program. Instructed M.S. and Ph.D. students in Radiological Health Physics.
- 1972-1973 St. Francis Hospital, Evanston, Illinois.
Medical Physicist and Radiation Safety Officer.
Advised the hospital administration on all safety and legal considerations with respect to ionizing and non-ionizing radiation. Provided health physics services for diagnostic X-ray, radiation therapy and nuclear medicine departments, including surveying, environmental monitoring, personnel monitoring and licensing. Calibrated diagnostic and therapeutic X-ray and teletherapy equipment. Planned treatments and performed dosimetry for external, intracavitary, interstitial and systemic radiation therapy. Designed beam blocking system for use during large-field therapy and developed a system for the use of equipment in large-field therapy. Taught radiology residents and X-ray technology students. Advised Safety Committee and hospital administration on the federal Occupational Safety and Health Act.

Eli A. Port
Page Three

1969-1972 Packard Instrument Co., Downers Grove, Illinois.
Radiation, Health and Safety Officer.
Responsible for all administrative and operational aspects of health physics program. Started company's OSHA compliance program. Designed and specified safety standards for Packard products used in hospitals and laboratories in a program to minimize product liability exposure. Taught fundamental and advanced courses in handling and use of radioactive materials. Conducted seminars for airlines and fire departments on transportation and handling of hazardous materials and emergency procedures.

1966 CERN, Geneva, Switzerland.
Visiting Scientist.
Evaluated health physics instrumentation for field surveys at 28 GeV Proton Synchrotron. Determined exposures and dose equivalents from data generated by instruments measuring conventional and exotic particle radiation.

1963-1965 Alpha R & D, Dixmoor, Illinois.
Project Director.
BuWeps program in interfacial phenomena of composite glass-resin systems using THO as tracer. Radiation Safety Officer responsible for curie quantities of H-3.

Certification: American Board of Health Physics
American Board of Industrial Hygiene

Registration: Professional Engineer

Education: M.S.: Radiological Health Physics, Northwestern University, 1968.
Thesis Topic - Chemical Radioprotective Properties of Cyclic Choline Xanthate.

B.S.: Physics, Roosevelt University, 1963.

Eli A. Port
Page Four

Papers and Publications:

Health Physics Instrumentation at CERN, Internal Report, 1966.

Radioprotective Properties of Cyclic Choline Xanthate, Annual Meeting, Health Physics Society, Denver, Colorado, 1968.

Benefit vs. Risk Criteria in Pediatric Radiography, 2nd International Congress of the International Radiation Protection Association, Brighton, England, 1970.

A Mathematical Model for Establishing the Benefit vs. Risk Criterion on Diagnostic Radiology, Symposium on Population Exposures A, CONF 741018 US AEC/TIC.

An Improved Container for Radioactive Waste in Laboratories and Hospitals, Journal of Chemical Education, April 1975.

An Improved Receptacle for Radioactive Waste, Health Physics, November 1975.

How To Reduce Radioactive Waste Disposal Costs, Industrial Hygiene & Safety, May 1987.

Radon Measurements: Are They Accurate And Precise, The Radon Industry Review, April, 1990.

Michael T. Van Der Karr, C.H.P.

205 S. Hale Street ■ Addison, Illinois 60101 ■ mtvdk@mcs.net ■ (630) 458-1624

PROFESSIONAL PROFILE

- Consistently take initiative in identifying problems, offering creative solutions, and improving efficiency and quality.
- Customer service oriented, very personable, high energy level, self motivated with ability to quickly learn any subject, high standard of ethics.
- Work effectively independently, without supervision, and as a team member.
- Proven interpersonal and communication skills: teaching, procedure and report writing, listening.
- Excellent computer skills: Win95, DOS, Mac, programming, Fortran, MS Word, Excel, Access, Powerpoint, Internet communication, Web page development, Microshield, Microskyshine, and gamma spectroscopy.
- Plan, develop and coordinate large projects.

PROFESSIONAL EXPERIENCE

- HEALTH PHYSICS CONSULTANT** Jan. 1998 – Present
Radiation Safety Services, Inc. Morton Grove, Illinois
Decontamination and decommissioning. Program audits. Training. Writing reports and procedures. Dose modeling. Manage lab. Automate leak testing services. Representation at NRC enforcement conferences.
- RADIOACTIVE MATERIAL MANAGER AND RAD. WASTE GROUP SUPERVISOR** June 1997 – Jan. 1998
Stanford Linear Accelerator Center Stanford, California
Supervised a professional and three technicians. Created database for complete radioactive material tracking across the SLAC Intranet. Developed radioactive material program and operating procedures. Hands on management of facility led to accolades from upper management and Department of Energy personnel.
- TECHNOLOGY DIRECTOR, COMPUTER INSTRUCTOR, SYSTEMS ADMINISTRATOR** July 1996 – June 1997
Carmel High School Mundelein, Illinois
Developed technology plan. Installed software, hardware, network, and web servers. Managed \$50k budget. Taught faculty and students in MS Office and Internet use. Championed efficient use of resources.
- OPERATIONAL HEALTH PHYSICIST AND RADIATION PROTECTION INSTRUCTOR** Jan. 1990 – Dec. 1995
Brookhaven National Laboratory Upton, New York
Developed, administered, and presented the BNL safety training program. Operational field support including surveys and control for radiation fields up to 1000R/hr, neutron fields, high contamination, airborne areas, chemical, and industrial jobs. Supervisor in charge of safety for the Waste Management Group. Characterized and managed the transfer, storage, and disposal of radioactive waste. Formulated, implemented and managed a complete radiation protection program. Instituted controls that stopped the spread of contamination on personal clothing. Oversaw radioactive shipments to ensure federal regulations were followed. Cut background radiation levels by half in waste facility. Provided field coverage & all technician duties.
- DESKTOP PUBLISHING SOFTWARE TECHNIQUES CONSULTANT AND DEVELOPER** May 1989 – Jan. 1990
Apple Computer Incorporated Cupertino, California
- DESKTOP PUBLISHING COORDINATOR AND MATH TEXTBOOK WRITER & EDITOR** June 1986 – May 1989
Addison-Wesley Publishing Company Menlo Park, California

OTHER PROFESSIONAL ACHIEVEMENTS

16 hour DOT, 40 hour Conduct of Operations Assessment, 40 hour supervisor training, 16 hour Total Quality Management, 24 hour Radiological Assistance Program, 8 hour project coordinator, 16 hour technical writing, 40 hour HAZWOPER, 8 hour Hazmat, 24 hour asbestos sampling, LOTO, 100 hour Performance-Based Training, High School Math Teacher, Junior College Algebra Teacher.

EDUCATION

- MASTER OF SCIENCE IN RADIOLOGICAL HEALTH PHYSICS**, May 1993.
San Jose State University San Jose, California
- BACHELOR OF SCIENCE IN ENGINEERING PHYSICS**, June 1982.
Santa Clara University Santa Clara, California
- Certification by American Board of Health Physics (ABHP) in 1994



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Morton Grove, IL 60053-2723
847-965-1999
Fax 847-965-1991

DAVID R. FERMIN

EDUCATION

Northwestern University, Robert R. McCormick School of Engineering
Bachelor of Science in Biomedical Engineering, December 1998
Concentration: Biotechnology **Theme:** Music Performance

EXPERIENCE

RSSI

9/98—Present

Laboratory Technician/Programmer

- Program computer applications for laboratory analysis tasks including data acquisition, data management, and report generation for laboratory samples
- Perform other technical support and laboratory tasks including PC support and maintenance, radon analysis, and preparation of survey instruments for calibration

Department of Molecular Pharmacology and Biological Chemistry,
Northwestern University Medical School (Chicago, IL)

6/97—9/98

Research Technician

- Designed and programmed a high throughput drug screening assay for the Beckman Biomek robotic workstation
- Programmed Visual Basic routines in Excel to automate data import, calculation, and graphing
- Designed and optimized a system for cloning, expression, and purification of target proteins using an *E. Coli* expression system
- Performed assays with nucleic acid radiolabeling, protein dyeing, cell staining, and other techniques

Technology Support Services, Northwestern University (Evanston, IL)

9/95—6/97

Senior Residential Networking Consultant

- Performed advanced troubleshooting of Ethernet networking for student computer users in University residence halls
- Managed and trained a group of Residential Networking Consultants
- Managed ResCon recruitment, application, interview, and selection process

UOP Incorporated (Des Plaines, IL)

6/96—9/96

Chemical Engineering Intern—Yield Estimate Team

- Worked on project to test validity of a computer simulation for estimating product yields of Fluid Catalytic Cracking (FCC) reactors
- Developed Access databases to archive simulated data, commercial reactor data, pilot plant data, and previous yield estimate calculations for comparison and calculation
- Designed “front-end” data-management applications using Visual Basic

SKILLS

Laboratory: Fluorescence, radiolabeling, PCR, cloning, bacterial cell culture, gel electrophoresis
Operating Systems: MS-DOS, Windows 3.x/95/98, NT 4.0, MacOS, UNIX
Applications: MS Access, Word, Excel, PowerPoint, Publisher
Programming Languages: Visual Basic, FORTRAN, HTML

BRYAN J. BAGG

CURRICULUM VITAE

Experience:

1989- RSSI, Morton Grove, Illinois. Health Physicist and Industrial Hygienist.

1985-1989 IIT Research Institute. Assistant Biologist

Health Physics:

Radiation Safety Officer at a large Research Institute and a private not-for-profit University. Assist the Radiation Safety Officer at two other programs. Oversee the use of radioactive materials for approximately 50 users authorized by the above listed Radiation Safety Programs. Have conducted numerous contamination surveys for naturally occurring radioactive material and various by-product materials. Directed the decontamination of approximately 50 microcuries of Sr-90 in a research laboratory. Experience in the operation and calibration of radiation survey meters. Developed computer simulation models for alpha-track radon monitor analyses.

Safety:

Performed over 100 Occupational Safety and Health Surveys which have included automobile repair facilities, office buildings and industrial complexes. Safety audits have comprised reviewing and recommending improvements for walking/working surfaces, machine guarding, housekeeping, ladder inspections, compressed gas cylinders, eyewash and safety showers, fall protection, electrical safety, lockout/tagout procedures, training programs and documentation. Participated in over 20 fire protection surveys.

Bryan J. Bagg
Page Two

Industrial Hygiene:

Performed over 200 Indoor Air Quality surveys which included quantitation of indoor air pollutants, assessing the adequacy of HVAC systems, interviewing employees regarding IAQ problems and recommending corrective actions.

Industrial Hygiene Audits have comprised reviewing and recommending improvements for respiratory protection programs and hazard communication programs. Have conducted air monitoring for asbestos and lead.

Environmental:

Performed over 100 Environmental Hazard Assessments which included one or more of the following: air monitoring for asbestos, collection of bulk samples for asbestos identification, collection of soil samples for analysis, conducting walk-through inspections to identify current and potential environmental hazards such as leaking underground storage tanks, reviewing records of past property ownership and recommending corrections actions.

Education:

1985-present Illinois Institute of Technology,
Graduate studies in Environmental Toxicology.

May 1985 Bachelor of Science, Biology, University of Illinois at Urbana/Champaign.

MICHAEL C. BUTLER

RSSI

6312 West Oakton Street
Morton Grove, IL 60053-2723
847-965-1999
Fax 847-965-1991

EDUCATION

Northwestern University

Evanston, IL

Bachelor of Science in Environmental Engineering, June 1999

- Concentration in History
- Relevant Coursework: Environmental Geology, Environmental Engineering Analysis, Ecosystems and Ecotoxicology, Radiological Health Engineering, Chemistry of the Natural Environment, Chemistry of the Aquatic Environment, Community Air Pollution, Public Health Engineering, Sanitary Engineering, Environmental Engineering Design, Environmental Impact Evaluation
- Honors and Activities: 1998-99 Environmental Engineering Service Learning Project, Special Olympics Advertising Committee Co-chair, Northwestern Intramural Basketball 1997 and 1998 Champions, Residence Hall Government Special Event Planning 1996-7, 1997-98 Fitness and Recreation Employee of the Year

SKILLS

Operating Systems: Windows, DOS, and UNIX

Languages: FORTRAN, Basic, MATLAB, and HTML

Programs: AutoCAD, and Microsoft Office Suite

Additional: Conversant in French. Strong communication and teamwork skills.

RELATED
EXPERIENCE

Lake Calumet Cluster Site, 1998-99 Service Learning Project

Northwestern University

Student Researcher

(11/98 - 6/99)

- Research history and site characteristics of several hazardous waste storage and disposal facilities
- Determine contaminant concentrations and migration patterns
- Design a wetland to be used to effectively remediate contaminated soil

Radiation Safety Services, Inc.

Morton Grove, IL

Consultant / Laboratory Technician

(5/97 - present)

- Manage the completion of client projects involving identification, control, and remediation of radioactive materials and associated contamination in accordance with applicable regulations
- Produce and analyze radon monitoring devices
- Perform extensive laboratory work in radiation detection

McHenry Analytical Water Laboratory

McHenry, IL

Laboratory Technician

(9/94 - 9/95)

- Analyzed water samples for various chemical and biological characteristics
- Gained experience in groundwater monitoring and field sampling techniques
- Learned and performed most aspects of laboratory operation

Illinois Rivers and Middle School Groundwater Project

Woodstock, IL

Volunteer

(1994 - 1995)

- Organized and conducted regional activities within a statewide program to monitor water quality and educate elementary through high school students
- Gained experience working with and presenting to large and diverse groups

OTHER
EXPERIENCE

Henry Crown Sports Pavilion and Norris Aquatic Center

Northwestern University

Building Supervisor

(9/95 - present)

- Directly oversee constant operations of a large sports and recreation facility
- Responsible for handling ongoing procedures and any emergency situations

ATTACHMENT 6

Asphalt Screening Procedure

Asphalt Screening Procedure

1. Purpose

This procedure describes the methods to be used for surveying asphalt after it has been stripped.

2. Scope

This procedure only applies to the remaining asphalt that was in-place before previous remediation activities. Asphalt that was placed on clean fill is assumed to be clean.

3. References

- 3.1. Lindsay Light Removal Action Work Plan 100-1 section 4.1.2.1
- 3.2. Quality Assurance Project Plan Document 200 from the Scoping and Planning Documents

4. Equipment and Materials

The following equipment may be used as part of the survey program. Other equipment, upon approval of USEPA, may be substituted as necessary due to availability or conditions encountered at the site.

- 4.1. Ludlum Model 193 with 2" by 2" NaI probe
- 4.2. Approved lab for soil analysis

5. Instructions

- 5.1. Remove asphalt and base course material lying above potentially radioactive soil. This material may be placed in a pile or held in the excavator bucket until the survey has been completed. Note: Asphalt that was placed over clean fill or base course material is not subject to surveying or testing.
- 5.2. Survey newly exposed soil surface with a gamma meter equipped with a NaI probe. Surveys will be performed at no more than a 5 meter grid spacing with intra-grid screening in accordance with the site-wide screening program. As with the site-wide screening program, the cutoff for screening of the newly exposed soil below the asphalt and base course is 7.1 pCi/gm minus two standard deviations.
 - 5.2.1. If the soil surface that was exposed as a result of the asphalt and base course material's removal is surveyed clean, that removed asphalt and base course material may be placed directly into trucks for disposal or stockpiled for future disposal.

- 5.2.2. If the soil surface that was exposed as a result of the asphalt and base course material's removal is surveyed as contaminated, that removed asphalt and base course material shall be placed directly into Kerr-McGee provided shipping containers for shipment to Envirocare or stockpiled in a secured area for later container loading. This area of asphalt stripping will then be considered an exclusion zone following appropriate measures as outlined in the Work Order.
- 5.3. Take representative samples of the asphalt and base course material . A sampling frequency of one sample per 1500 ft² (approximately 40 ft. x 40 ft.) of clean surface is proposed. Sampling and analysis is proposed to demonstrate the clean asphalt and base course material meets the clean-up threshold and is in addition to the field screening of soil. This effort is purely confirmatory in nature and does not require USEPA analytical duplication.
- 5.4. Radiological Analysis
- 5.4.1. Follow the Quality Assurance Project Plan Document 200 to analyze the samples.

6312 West Oakton St.
Morton Grove, IL 60053-2723
847-965-1999

Instrument: Make: Eberline Model: ESP-1 Serial Number _____ Probe _____ Cal Date / /
Maximum Background Level _____ Instrument Used By _____
Check Source Identification _____ Expected Response _____

[illegible]

Comments _____

RSSI

6312 West Oakton St.
Morton Grove, IL 60053-2723
847-965-1999

Eberline Model ESP-1 Calibration to Kerr-McGee Source Block

ESP-1 Serial Number						
Date						
Initials						
Background (cpm)						
Background (cpm)						
Background (cpm)						
Background (cpm)						
Background (cpm)						
Background (cpm)						
Average Background (cpm)						
Source (cpm)						
Source (cpm)						
Source (cpm)						
Source (cpm)						
Source (cpm)						
Source (cpm)						
Average Source (cpm)						
<i>Reserved</i>						
1.0 pCi/gm (cpm)						
7.1 pCi/gm (cpm)						
Stddev (cpm)						
<i>Reserved</i>						
Alarm (cpm)						

Comments _____

ATTACHMENT 7

Gamma Survey Meter Use Procedures

Ludlum 193 Procedure

1. Purpose

This procedure describes the methods to be used for surveying with the Ludlum 193 meter with a model 44-10 2" by 2" NaI(Tl) gamma scintillator.

2. Scope

This procedure applies to surveying soil in-situ, in backhoe buckets or on other equipment that lifts soil out of the ground such as augers. Positive results will be checked by the lead health physicist to ensure the accuracy of the readings. Positive results will trigger the Authorized Project Coordinator to direct the establishment of an exclusion zone and removal of the contaminated soil. All personnel who use the meter must read and understand sections 1-5 of the Ludlum 193 instruction manual.

3. References

- 3.1. Ludlum 193 Manual
- 3.2. RSSI Instrument Calibration Manual
- 3.3. Calibration Trial Form (RSSI form used to document calibrations)
- 3.4. Scoping and Planning Documents for Excavation and Restoration Activities (S&P Documents)

4. Equipment and Materials

The following equipment may be used as part of the survey programs. Other equipment may be substituted, upon approval of the USEPA, as necessary due to availability of the items listed or the conditions encountered at the site.

- 4.1. Ludlum 193 meter with a model 44-10 2" by 2" NaI(Tl) gamma scintillator
- 4.2. Daily Instrument Check Sheet (attached)
- 4.3. Ludlum Model 193 Calibration to Kerr-McGee Source Block form (attached)
- 4.4. Calibration standard provided by Kerr-McGee in West Chicago, IL
- 4.5. Check source(s)

5. Instructions

- 5.1. Calibration to Kerr-McGee Source Blocks

Initial meter calibration must already be performed. Instrument sensitivity plateau shall be considered when performing initial meter calibration. Calibration to the Kerr-McGee source blocks is only performed by the health physics supervisor or equivalent before use at the site, and recalibration will occur monthly and after any significant damage and/or repair to the equipment. All radiation levels are to be recorded with the slow response mode in cpm on the Ludlum Model 193 Calibration to Kerr-McGee Source Block form except where noted. At the request of the USEPA, we are deviating from the Kerr-McGee calibration procedure by not using background information in deriving cut-off values.

- 5.1.1. Record the check source identification and response at the top of the Daily Instrument Check Sheet from the Trial Form.
- 5.1.2. Perform the daily instrument checks listed in the section 5.3.
- 5.1.3. The concentration of the Kerr-McGee source block is 10 pCi/gm.
- 5.1.4. Record the background radiation level (Bkgd) on contact with the background blocks.
- 5.1.5. Record the 10 pCi/gm source block radiation level on contact with the source blocks (Source).
- 5.1.6. Calculate the level of the Kerr-McGee 10 pCi/gm source block for 1 pCi/gm
(1 pCi/gm level = Source \div 10).
- 5.1.7. Calculate the radiation level for 7.1 pCi/gm
(7.1 pCi/gm level = 1 pCi/gm level \times 7.1)
- 5.1.8. Calculate the standard deviation of the 7.1 pCi/gm level. (Stddev = 7.1 pCi/gm level)^{1/2}.
- 5.1.9. Calculate the cutoff value. (Cutoff = 7.1 pCi/gm - 2 \times Stddev)

5.2. Alarm Setpoint

The alarm setpoint is only adjusted by the health physics supervisor or equivalent. All radiation levels are to be recorded in cpm unless stated otherwise.

- 5.2.1. After performing the daily instrument check, record the background in the Maximum Background Level at the top of the Daily Instrument Check Sheet.

If this level is exceeded with future use of the instrument, the alarm setpoint is recalculated and a new Daily Instrument Check Sheet started.

- 5.2.2. Calculate the meter level that corresponds to the cutoff value in cpm. Record this value on the Ludlum Model 193 Calibration to Kerr-McGee Source Block form.
- 5.2.3. Expose the instrument to a check source. Adjust the alarm "SET" potentiometer until the alarm is initiated for the calculated level.
- 5.2.4. Remove the source and depress the "RESET" button to disable the alarm. Slowly increase the meter reading with the check source to confirm the desired alarm set point. Readjust as necessary.

5.3. Daily Instrument Check and Set-Up

Any deviations from what is expected must be brought to the health physics supervisor's attention before the instrument may be used.

5.3.1. Visual Inspection

Inspect the instrument to ensure there is no damage to the instrument or probe.

5.3.2. Battery Check

5.3.2.1. Ensure both toggle switches are in the up position, pointing to AUD "ON," and "F." Rotate the Range selector switch to the "BAT" position. Ensure the pointer deflects above the vertical mark in the "BAT OK" region. Select the x10 range.

5.3.2.2. The batteries are to be replaced at 20% of the low level indication.

5.3.3. Background Check and Background Alarm

5.3.3.1. After background is established for 8 seconds, record the background level. Ensure the background level is below the maximum background level specified on the Daily Instrument Check Sheet. Move to a lower background area if necessary.

5.3.3.2. The background must be recorded each time the instrument is turned on or reset.

5.3.4. Source Check

5.3.4.1. Expose the detector to the check source as specified on the instrument. Ensure the intermittent background audio and visual alarm is initiated followed by the constant alarm.

5.3.4.2. Record the check source response on the Daily Instrument Check Sheet.

5.3.4.3. If the instrument differs more than 20% from the stated expected response, contact the health physics supervisor.

Documentation

All fields in the Daily Instrument Check Sheet table must be filled out before the instrument is used each day. Only the time and background level need to be filled during that same day when the instrument is reset or subsequently turned off and back on.

5.4. Survey Techniques

The same survey techniques and survey equipment will be used to survey soil to meet the release criteria of 7.1 pCi/gm no matter where the soil is located.

5.4.1. Soil in-situ

Follow procedure SOP-210 from the S&P Documents.

5.4.2. Soil in-situ following asphalt removal

Follow procedure SOP-210 from the S&P Documents.

5.4.3. Backhoe buckets

Follow procedure SOP-210 over the exposed soil. Do not survey through the bucket. If there is more than two feet of soil in the bucket, resurvey the soil after it has been emptied.

5.4.4. Augers

Follow procedure SOP-210 while the soil is on the auger on all sides. If the auger is more than four feet in diameter, resurvey the soil after it has been spun off.

5.4.5. Other applications

In general, follow procedure SOP-210 while ensuring the thickness of soil being surveyed is no more than two feet.

5.5. Investigating Positive Results

5.5.1. Background alarm

Occasionally, fluctuations in background will cause the instrument to beep. This is a normal function of the instrument. Multiple beeps indicates an increase in the radiation level and possibly the presence of radium. If the instrument responds with multiple beeps, stop and resurvey the area. If multiple beeps are clearly present, mark the area with paint and notify the health physics supervisor after the surveys are completed.

This practice may be modified in the field with the Health Physics Supervisor's, Authorized Project Coordinator's and USEPA Agency approval. This is expected in known contamination areas such as Lake Lindsay.

5.5.2. Range alarm

The range alarm is a steady alarm that is actuated after the background alarm when radiation levels indicate the possible presence of radium in excess of 7.1 pCi/gm minus two standard deviations. If the instrument responds with a steady beep, stop the operations and telephone the health physics supervisor and then the Authorized Project Coordinator.

This practice may be modified in the field with Health Physics Supervisor's, Authorized Project Coordinator's and USEPA approval. This is expected in known contamination areas such as Lake Lindsay.

Eberline ESP-1 Procedure

1. Purpose

This procedure describes the **methods** to be used for surveying with the Eberline ESP-1 meter with a 2" by 2" NaI(Tl) **gamma** scintillator.

2. Scope

This procedure applies to **surveying soil in-situ**, in backhoe buckets or on other equipment that lifts soil out of the **ground** such as augers. Positive results will be checked by the lead health physicist to ensure the accuracy of the readings. Positive results will trigger the Authorized Project Coordinator to direct the establishment of an exclusion zone and removal of the contaminated soil. All personnel who use the meter must read and understand all of section I and parts A, B, C and D of section II of the Eberline ESP-1 instruction manual.

3. References

- 3.1. Eberline ESP-1 Manual
- 3.2. RSSI Instrument Calibration Manual
- 3.3. Calibration Trial Form (RSSI form used to document calibrations)
- 3.4. Scoping and Planning Documents for Excavation and Restoration Activities (S&P Documents)

4. Equipment and Materials

The following equipment may be used as part of the survey programs. Other equipment may be substituted if necessary because of availability of the items listed or the conditions encountered at the site.

- 4.1. Eberline ESP-1 meter with a 2" by 2" NaI(Tl) gamma scintillator
- 4.2. Daily Instrument Check Sheet (attached)
- 4.3. Eberline ESP-1 193 Calibration to Kerr-McGee Source Block form (attached)
- 4.4. Calibration standard provided by Kerr-McGee in West Chicago, IL
- 4.5. Check source(s)

5. Instructions

- 5.1. Calibration to Kerr-McGee Source Blocks

Initial meter calibration must already be performed. Instrument sensitivity plateau shall be considered when performing initial meter calibration. Calibration to the Kerr-McGee source blocks is only performed by the health physics supervisor or equivalent before use, and recalibration will occur monthly and after any significant damage and/or repair to the equipment. All radiation levels are to be recorded in cpm on the Eberline Model ESP-1 Calibration to Kerr-McGee Source Block form except where noted. At the request of the USEPA, we are deviating from the Kerr-McGee calibration procedure by not using background information in deriving cut-off values.

- 5.1.1. Record the check source identification and response at the top of the Daily Instrument Check Sheet from the Trial Form.
- 5.1.2. Perform the daily instrument checks listed in the section 5.3.
- 5.1.3. The concentration of the Kerr-McGee source block is 10 pCi/gm.
- 5.1.4. Record the background radiation level (Bkgd) on contact with the background blocks by performing 6 one minute counts and calculating the average.
- 5.1.5. Record the 10 pCi/gm source block radiation level on contact with the source blocks by performing 6 one minute counts and calculating the average(Source).
- 5.1.6. Calculate the level of the Kerr-McGee 10 pCi/gm source block for 1 pCi/gm
(1 pCi/gm level = Source \div 10).
- 5.1.7. Calculate the radiation level for 7.1 pCi/gm
(7.1 pCi/gm level = 1 pCi/gm level \times 7.1)
- 5.1.8. Calculate the standard deviation of the 7.1 pCi/gm level. (Stddev = 7.1 pCi/gm level)^{1/2}.
- 5.1.9. Calculate the cutoff value. (Cutoff = = 7.1 pCi/gm level - 2 \times Stddev)

5.2. Alarm Setpoint

The alarm setpoint is only adjusted by the health physics supervisor or equivalent. All radiation levels are to be recorded in cpm unless stated otherwise.

- 5.2.1. After performing the daily instrument check, record the background in the Maximum Background Level at the top of the Daily Instrument Check Sheet.

If this level is exceeded with future use of the instrument, the alarm setpoint is recalculated and a new Daily Instrument Check Sheet started.

- 5.2.2. Calculate the meter level that corresponds to the cutoff value in cpm. Record this value on the Eberline Model ESP-1 Calibration to Kerr-McGee Source Block form.
- 5.2.3. Press the mode key. At the "SCALER MODE" prompt press the - key.
- 5.2.4. Adjust the alarm setting by simultaneously pressing the REST and + or RESET - until the alarm is set for the calculated level.
- 5.2.5. Slowly increase the meter reading with a check source to confirm the desired alarm set point. Readjust as necessary.

5.3. Daily Instrument Check and Set-Up

Any deviations from what is expected must be brought to the health physics supervisor's attention before the instrument may be used.

5.3.1. Visual Inspection

Inspect the instrument to ensure there is no damage to the instrument or probe.

5.3.2. Battery Check

5.3.2.1. Turn the instrument on. Turn the speaker on. Ensure the first character in the display is not blinking. This is the battery low indication.

5.3.2.2. The batteries are to be replaced at the first possible opportunity when the first character is blinking.

5.3.3. Background Check and Background Alarm

5.3.3.1. Record the background level. Ensure the background level is below the maximum background level specified on the Daily Instrument Check Sheet. Move to a lower background area if necessary.

5.3.4. Source Check

5.3.4.1. Expose the detector to the check source as specified on the instrument. Ensure the alarm is initiated.

5.3.4.2. Record the check source response on the Daily Instrument Check Sheet.

5.3.4.3. If the instrument differs more than 20% from the stated expected response, contact the health physics supervisor.

5.3.5. Documentation

All fields in the Daily Instrument Check Sheet table must be filled out before the instrument is used each day.

5.4. Survey Techniques

The same survey techniques and survey equipment will be used to survey soil to meet the release criteria of 7.1 pCi/gm no matter where the soil is located.

5.4.1. Soil in-situ

Follow procedure SOP-210 from the S&P Documents.

5.4.2. Soil in-situ following asphalt removal

Follow procedure SOP-210 from the S&P Documents.

5.4.3. Backhoe buckets

Follow procedure SOP-210 over the exposed soil. Do not survey through the bucket. If there is more than two feet of soil in the bucket, resurvey the soil after it has been emptied.

5.4.4. Augers

Follow procedure SOP-210 while the soil is on the auger on all sides. If the auger is more than four feet in diameter, resurvey the soil after it has been spun off.

5.4.5. Other applications

In general, follow procedure SOP-210 while ensuring the thickness of soil being surveyed is no more than two feet.

5.5. Investigating Positive Results

5.5.1. Above background levels

If the instrument responds with an increase in the audio output, stop and resurvey the area. If there is clear increase, mark the area with paint and notify the health physics supervisor after the surveys are completed.

This practice may be modified in the field with the Health Physics Supervisor's, Authorized Project Coordinator's and USEPA Agency approval. This is expected in known contamination areas such as Lake Lindsay.

5.5.2. Range alarm

The range alarm is a steady alarm that is actuated when radiation levels indicate the possible presence of radium in excess of 7.1 pCi/gm minus two standard deviations. If the instrument responds with an alarm, stop the operations and telephone the health physics supervisor and then the Authorized Project Coordinator. This practice may be modified in the field with Health Physics Supervisor's, Authorized Project Coordinator's and USEPA

approval. This is expected in known contamination areas such as Lake Lindsay.

6312 West Oakton St.
Morton Grove, IL 60053-2723
847-965-1999

Instrument: Make: Ludlum Model: 193 Serial Number _____ Probe Ludlum 44-10 Cal Date / /
Maximum Background Level _____ Instrument Used By _____
Check Source Identification _____ Expected Response _____

[illegible]

Comments _____

RSSI

6312 West Oakton St.
Morton Grove, IL 60053-2723
847-965-1999

Ludlum Model 193 Calibration to Kerr-McGee Source Block

193 Serial Number						
Date						
Initials						
Background (cpm)						
Source (cpm)						
<i>Reserved</i>						
1.0 pCi/gm (cpm)						
7.1 pCi/gm (cpm)						
Stddev (cpm)						
<i>Reserved</i>						
Cutoff (cpm)						

Comments _____

ATTACHMENT 8

Air Monitoring Procedure

Air Monitoring Procedure (SOP-212)

1. Purpose

This procedure describes the methods to be used for sampling and measurement of airborne radioactive materials. The measurement data will be used to evaluate the effectiveness of health and safety measures at the work site. Controls will be established as necessary based upon the measurements to ensure regulatory compliance and appropriate protective measures for workers and the public.

2. Scope

This procedure applies to field activities that may generate dust or airborne emissions from the site. The health physics sub-contractors will establish four site environmental monitoring stations to measure background air quality in the area. The objectives of the air sampling program described in this plan are to collect sufficient air samples during soil excavation to assure that excessive airborne contaminated dust is not being released and that air quality at the worker's breathing zone is as low as reasonably achievable (ALARA).

3. References

- 3.1. Code of Federal regulations, Title 10, Part 20, Standards for Protection Against Radiation.
- 3.2. IAC application (page 6-2 of environmental analysis)
- 3.3. Kerr-McGee Environmental Air Monitoring Program Appendix I.
- 3.4. RSSI planchette counter operation procedures.

4. Equipment and Materials

The following equipment may be used as part of the survey programs. Other equipment may be substituted as necessary due to availability of the items listed or the conditions encountered at the site.

- 4.1. Environmental Monitoring Stations
- 4.2. Nuclear Chicago Model 110 Alpha Counter with a Ludlum 2200 Scaler
- 4.3. Ludlum 193 or Eberline ESP-1 with 2" x 2" NaI detector
- 4.4. Nuclear Chicago Spectro Shield proportional counter
- 4.5. Daily Work Area Air Monitoring Sheet, Form SOP 212-1.

4.6. STS Chain-of-Custody Form.

5. Instructions

5.1. Site Air Monitoring Locations and Requirements

- 5.1.1. Four air monitoring stations shall be used during excavation activities.
- 5.1.2. Air monitoring locations will be located near the middle of each edge of the site.
- 5.1.3. Air shall be drawn into the sample at a height between 1 and 2 meters above the ground.
- 5.1.4. The minimum detectable activity (MDA), measured in $\mu\text{Ci}/\text{ml}$, shall be re-established following equipment modification or replacement.
- 5.1.5. Air sample filters shall be collected at least weekly during excavation activities.
- 5.1.6. The air monitoring stations will be checked at least daily to ensure proper operation.
 - 5.1.6.1. Perform a visual inspection to check the integrity of the filter. Verify that the filter has no cracks, unacceptable wear, excessive accumulation of dust or any other limitation of air flow.
 - 5.1.6.2. Measure the relative activity with a pancake GM meter and 2" x 2" NaI detector. The relative activity will be monitored from day to day to determine whether any one day's construction activities has created a contaminated airborne dust concern. These screenings will form the basis for determining the need to modify site construction practices.

Filters which exhibit elevated readings relative to the previous day's readings will be replaced. Elevated readings in either alpha or gamma would be evidence of the need to replace the filters. In that the filters are proposed to sample for one week, an increase of greater than 25% from one day to the next would be considered indicative of elevated readings. Those filters, which are replaced, will be counted on a planchette counter to determine the actual levels of contamination.
 - 5.1.6.3. Ensure the flow rate has remained stable and at the appropriate value.
- 5.1.7. Flow rate through samples should be 10 liter/min. to meet the MDA for effluent release. This flow rate will allow the use of membrane filters instead of fiberglass filters.

Note: Some particulate become embedded in fiberglass filters. This will degrade the energy of alpha emitters making it impossible to distinguish the difference between alpha and beta radiation when measured with a counter.

5.2. Personnel Air Sampling Requirements

- 5.2.1. Workers working within an exclusion zone will wear personnel air monitors to evaluate the air quality at the worker's breathing zone.
- 5.2.2. Air sample filters shall be collected and analyzed at least daily during excavation activities.
- 5.2.3. If the action levels listed in Table 7-1 of the Health and Safety Plan are exceeded, follow the actions listed in Table 7-1.
- 5.2.4. Engineering controls such as dust control will be used to control airborne hazards before respiratory protection is considered.

5.3. Radiological Analysis

- 5.3.1. Radiological analysis shall be performed in accordance with the West Chicago Facility Quality System procedures.

The Nuclear Chicago model 110 alpha counting system is the primary counter. The Nuclear Chicago Spectro Shield is used for backup. The alpha counting effectiveness and MDAs for these systems are similar to the Gamma Products G5000 and Ludlum Model 2929/43-10 listed in the last revision to this procedure.

- 5.3.2. Samples will be analyzed for gross alpha concentration with counting performed in lab space immediately adjacent to the site. Air filters are counted for a minimum of 30 minutes for Th-232 alpha and 3 minutes for Pb-212.

- 5.3.2.1. A five-hour minimum waiting period from the time of collection to the time of counting will be observed to allow decay of short-lived uranium progeny and ingrowth of short-lived thorium progeny.

- 5.3.3. Contribution of site activities to airborne radioactivity shall be determined as follows:

- 5.3.3.1. The net counts are divided by the counter efficiency and volume of the sample to obtain the air concentration. Gross alpha counts will be divided by 5 to get a Thorium source concentration due to 5 alpha producing daughters.

- 5.3.4. Site Air Monitoring Analysis

- 5.3.4.1. The air concentration will be compared to the most limiting effluent concentration limit for Thorium-232 (4×10^{15} mCi/ml).
- 5.3.4.2. Samples exceeding the effluent concentration limit will be further evaluated to ensure that doses to individual members of the public are in compliance. Evaluations may include additional analyses to determine specific isotopic concentrations.
- 5.3.4.3. Annual average concentrations of radioactive material released in airborne effluents shall not exceed the effluent concentrations as specified in the January 1, 1994 revision of 32 IAC 340.

5.3.5. Personnel Air Sampling Analysis

- 5.3.5.1. The air concentration will be compared to the most limiting derived air concentration (DAC) limit for Thorium-232 (5×10^{13} mCi/ml).
- 5.3.5.2. Samples exceeding the concentration limit will be further evaluated to ensure that doses to individuals are in compliance. Evaluations may include additional analyses to determine specific isotopic concentrations.

Investigation

- 5.3.6. The Authorized Project Coordinator from STS or designee will perform investigations and responses consisting of one or more of the following actions in the event that Action Levels from the H&S Plan are exceeded. The Project Coordinator will request input from the Health Physics Supervisor on health physics technical issues.
 - 5.3.6.1. Verification of laboratory data and calculations.
 - 5.3.6.2. Analysis and review of probable causes.
 - 5.3.6.3. Evaluate need for reanalysis or additional analysis on original sample.
 - 5.3.6.4. Evaluate need for resampling.
 - 5.3.6.5. Evaluate need for sampling of other pathways.
 - 5.3.6.6. Evaluate need for notifications to regulators
 - 5.3.6.7. Dose assessments.
- 5.3.7. All investigations shall be documented.

5.4. Quality Control

- 5.4.1. All air samplers shall be in current calibration.

- 5.4.2. Sample chain-of-custody standard operating procedures will be followed for all samples using the STS Chain-of-Custody Form.
- 5.5. Sample Archive and Disposal
 - 5.5.1. All samples will be archived on-site in a suitable area until released by the Authorized Project Coordinator from STS.
 - 5.5.2. Samples will be disposed of according to the Sample Handling, Packages and Shipping SOP (SOP-218).

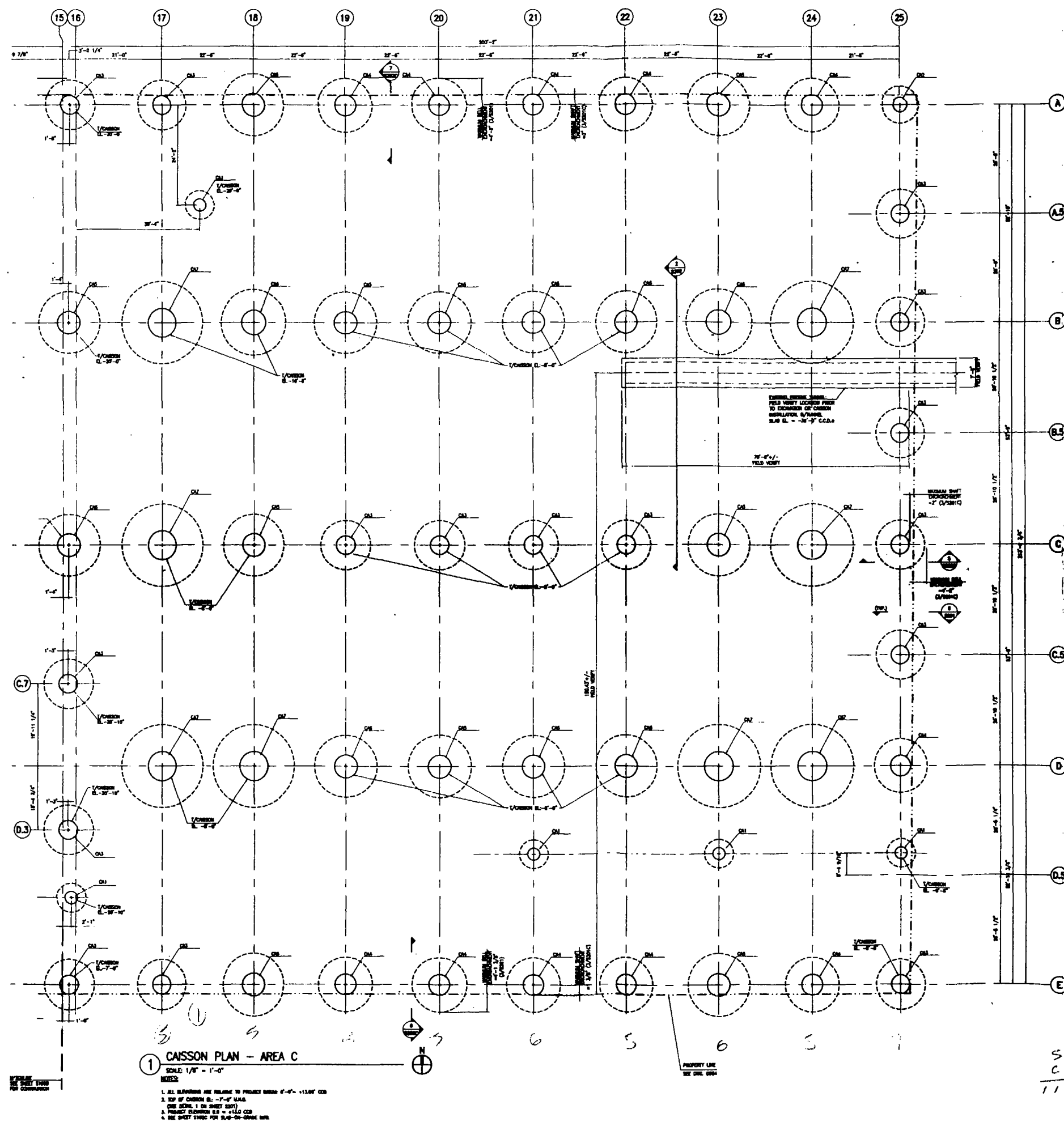
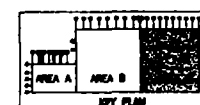


FIGURE 2B.
CAISSON PLAN - AREA C
STS PROJ. NO. 24418-XK



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Thomson-Ingersoll Engineers
Structural Engineer

Environmental Systems Design
Mechanical Engineer

Sturman, Dorrel & Associates, Inc.
Civil / Structural Engineer

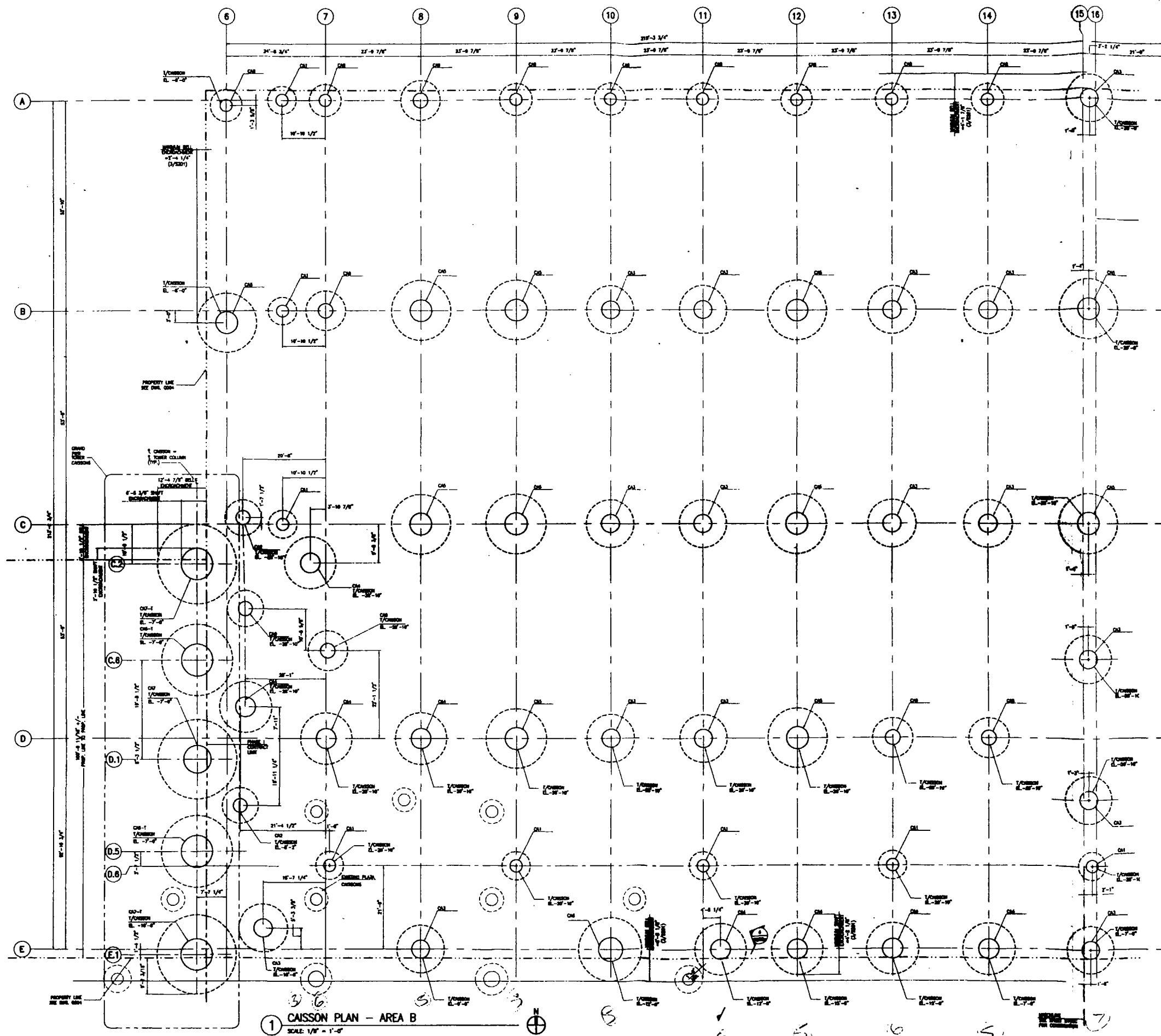
Grand Prix Center, LLC
Gentry
E.M. Chis & Associates, Inc.
Henderson
Morse Blood International
Contribution: Ovarian

GRAND PIER CENTER
ILLINOIS STREET
ILLINOIS STREET CHICAGO IL 60611

[illegible]

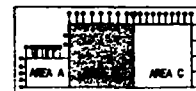
**CAISSON
PLAN
AREA C**

Sheet No. **S100C**



1 CAISSON PLAN - AREA B
 SCALE: 1/8" = 1'-0"
 NOTES:
 1. ALL DIMENSIONS ARE TO FACE UNLESS NOTED OTHERWISE.
 2. TOP OF CAISSON IS -24'-0" B.M.
 3. SEE BARBICUT PLAN/1010 FOR SLAB-ON-GRADE INFO.
 4. 1" BARBICUT TENSION CAISSON PER DCL 1201

FIGURE 2A.
 CAISSON PLAN - AREA B
 STS PROJ. NO. 24418-XK



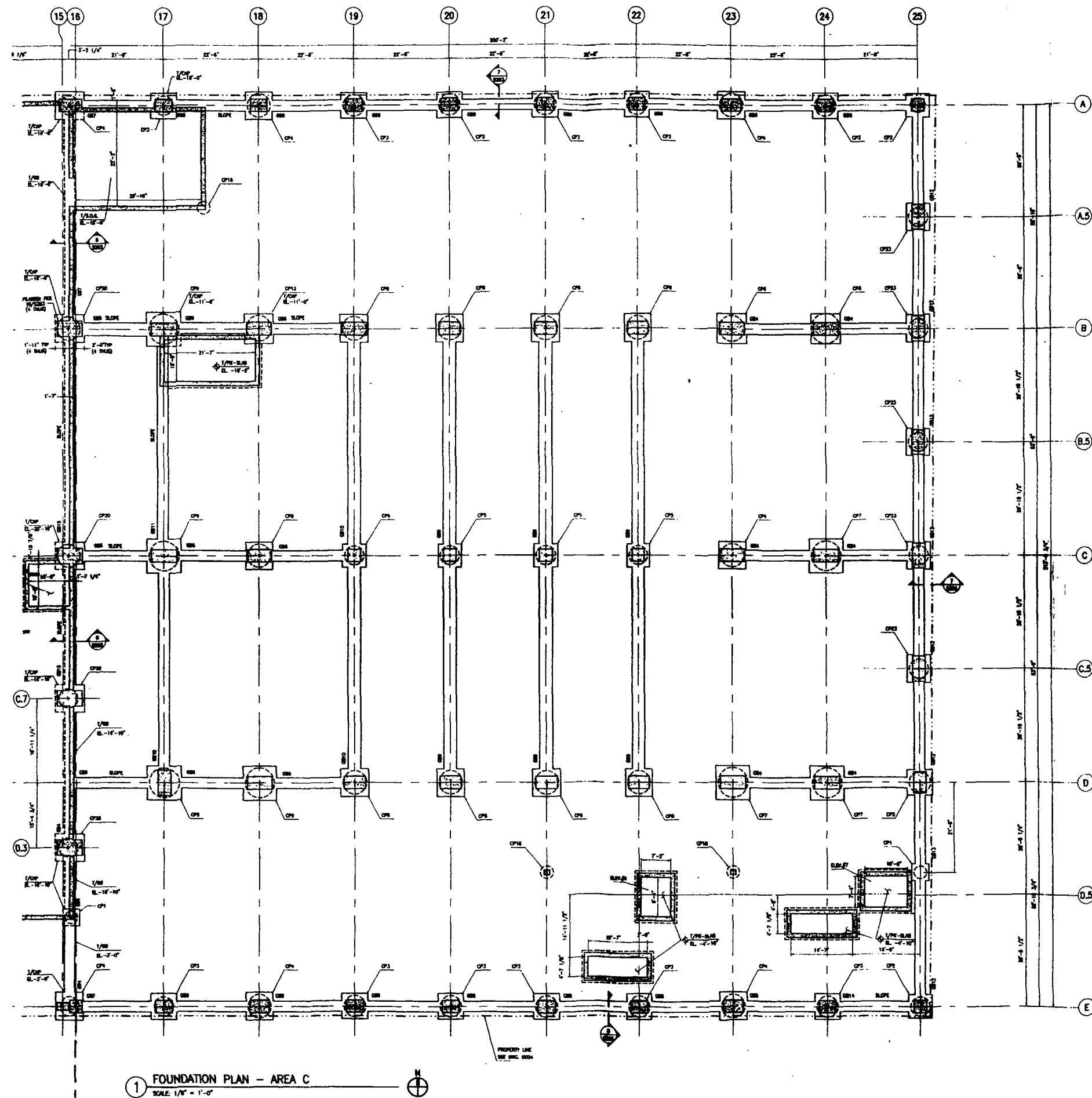
GRAND PIER CENTER

ILLINOIS STREET
 ILLINOIS STREET CHICAGO IL 60611

Lochl Schloeman & Hackel
 Architects - Planning - Interiors

Principal: Lochl Schloeman
 Designer: James J. Schloeman
 Designer: James J. Schloeman
 Designer: James J. Schloeman

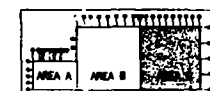
Scale: 1/8" = 1'-0"
 Date: 10/1/88
 Sheet: S100B



1 FOUNDATION PLAN - AREA C
SCALE: 1/8" = 1'-0"

- NOTES:
1. ALL ELEVATIONS ARE RELATIVE TO PROJECT DRAIN: 8'-0" = 11.25' C.D.
 2. TOP OF CURB OF R.L. 2'-0" U.L.S.
 3. TOP OF BEAM = 1/2" U.L.S.
 4. REFER TO PLUMBING DRAWINGS FOR UNDERGROUND DRAINAGE SYSTEM

FIGURE 3.
GRADE BEAM PLAN - AREA C
STS PROJ. NO. 24418-XK



Lochl Schlossman & Haddad
Architects - Planning - Interiors

Principal: Lochl Schlossman
Principal: Haddad
Principal: Haddad
Principal: Haddad

Grand Pier Center
ILLINOIS STREET
ILLINOIS STREET CHICAGO IL 60611

Grand Pier Center, LLC
Grand Pier Center, LLC
Grand Pier Center, LLC
Grand Pier Center, LLC

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Grand Pier Center, LLC

**FIGURE 4
ILLINOIS STREET
UPPER ROADWAY PLAN
STS PROJECT NO. 24418-XK**

**WORK PLAN FOR SITE RADIATION SURVEY
AND EXCAVATION SOIL MANAGEMENT
GRAND PIER CENTER
CHICAGO, ILLINOIS**

**AVAILABLE FOR VIEWING AT U.S. EPA REGION V RECORDS CENTER
77 W. JACKSON BLVD., 7TH FLOOR, CHICAGO, ILLINOIS**

FIGURE 5
ILLINOIS STREET VIADUCT
CAISSON LOCATION PLAN
STS PROJECT NO. 24418-XK

WORK PLAN FOR SITE RADIATION SURVEY
AND EXCAVATION SOIL MANAGEMENT
GRAND PIER CENTER
CHICAGO, ILLINOIS

AVAILABLE FOR VIEWING AT U.S. EPA REGION V RECORDS CENTER
77 W. JACKSON BLVD., 7TH FLOOR, CHICAGO, ILLINOIS

FIGURE 6
SUBSURFACE UTILITY PLAN
STS PROJECT NO. 24418-XK

WORK PLAN FOR SITE RADIATION SURVEY
AND EXCAVATION SOIL MANAGEMENT
GRAND PIER CENTER
CHICAGO, ILLINOIS

AVAILABLE FOR VIEWING AT U.S. EPA REGION V RECORDS CENTER
77 W. JACKSON BLVD., 7TH FLOOR, CHICAGO, ILLINOIS

ATTACHMENT 1
HEALTH AND SAFETY PLAN

**Grand Pier Center L.L.C.
North Columbus RV3 Project
Health and Safety Plan**

Title: Health and Safety Plan

Revision No: 0

Approved By:

Date:

**Grand Pier Center L.L.C.
North Columbus RV3 Project
Health and Safety Plan**

**Submitted to:
U.S. EPA Region V
Office of Superfund**

Richard G. Berggreen
Project Principal

Date

Health & Safety Coordinator

Date

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Appendix A Medical Evaluation Program

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Figure 4.1 Accident/Exposure Investigation Report

Figure 5.1 Safety Meeting Report

Figure 5.2 Safe Work Permit

EMERGENCY PHONE NUMBERS

IN THE EVENT OF AN EMERGENCY DIAL: 911

AMBULANCE SERVICE	911
FIRE DEPARTMENT	911
EMERGENCY RESCUE SERVICE	911
POLICE DEPARTMENT	911
NATIONAL RESPONSE CENTER	1-800-424-8802
CHEMTREC	1-800-424-9300
POISON CONTROL CENTER	1-800-732-2200
NORTHWESTERN MEMORIAL HOSPITAL	(312) 908-2000
ILLINOIS DEPARTMENT OF NUCLEAR SAFETY (IDNS) EMERGENCY NUMBER	(217) 785-0600
STS PROJECT PRINCIPAL	(847) 279-2472
ILLINOIS EMERGENCY MANAGEMENT	(217) 782-7860
U.S. EPA REGION V 24-HOUR EMERGENCY NUMBER	(312) 353-2318

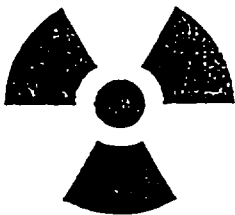
FIGURE 1.1
VISITOR INFORMATION SHEET

NORTH COLUMBUS RV3 SITE

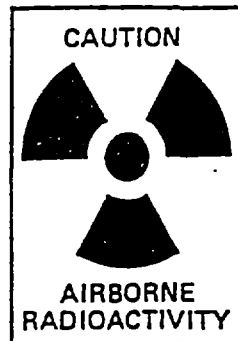
KM-4792

VISITOR INFORMATION

NOTICE TO VISITOR: ALL VISITORS MUST BE ESCORTED AT ALL TIMES WHILE ON THIS SITE.



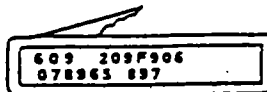
CAUTION. Radioactive materials are present on this site. Radioactive materials may be found throughout the site. Grounds, buildings and equipment have low levels of contamination.



CONTROLLED AREAS: Do not enter areas with these signs unless you have an escort or health physics has given specific approval and you understand access limitations.



You must wear protective clothing in controlled areas. Health physics will provide you with instructions.



You must wear a personal radiation dosimeter if you enter an area which is controlled.



No smoking, eating, drinking or chewing in controlled areas.
NO EXCEPTIONS.

You may request to see radioactive materials license for this facility as granted by the USNRC.
Notify Health Physics if you do not understand these instructions.

NAME _____ DATE _____

2. SAFETY MANAGEMENT

The following safety management structure will be utilized for the implementation, administration, and monitoring of the HASP.

2.1 HEALTH AND SAFETY COORDINATOR

The Health and Safety Coordinator (HSC) shall assume overall responsibility for the HASP. The HSC or designee shall monitor and maintain quality assurance of the HASP until project completion. Principal duties of the HSC include:

- Review project background data,
- Approve all HASP modifications,
- Administer and enforce the HASP,
- Evaluate the adequacy of personal protective equipment (PPE) to be used by Site personnel,
- Conduct required on-site training except tailgate safety meetings that will be conducted by the Field Team Leader,
- Brief visitors on work Site conditions, and
- Administer personnel and ambient air monitoring procedures.

The HSC or designee has the authority to stop work in the event conditions develop which pose an unreasonable risk to Site personnel or persons in the vicinity.

3. PERSONNEL RESPONSIBILITIES

The HSC or designee will administer and supervise the HASP at the work-site level. He will monitor all operations and will be the primary on-site contact for health and safety issues, and will have full authority to stop operations if conditions are judged to be hazardous to on-site personnel or the public.

The HSC will brief all Site personnel on the contents of the HASP. Personnel will be required to review the HASP, and have the opportunity to ask questions about the planned work or hazards. The Field Team Leader will conduct tailgate safety meetings to familiarize the Site personnel with Site conditions, boundaries, and physical hazards. Site personnel will conduct their assigned tasks in accordance with the HASP at all times.

If at any time Site personnel observe unsafe conditions, faulty equipment or other conditions which could jeopardize personnel health and safety, they are required to immediately report their observations to the HSC or Field Team Leader.

Work zones will be established at the Site. These zones include clean/support zones, decontamination zones, and exclusion zones. Although the clean/support zones are anticipated to remain fixed, other zones will move about the Site as drilling and excavation work progresses. Figure 3.1 shows the impacted areas where exclusion zones may be established during excavation activities.

4. HAZARD ASSESSMENT

The following represents potential hazards associated with this project.

4.1 PRINCIPAL CONTAMINANTS (KNOWN OR SUSPECTED)

- Thorium
- Uranium
- Radium
- Radon

The contaminants are present in the soil at low concentrations. These primary routes of entry to the body will be considered:

<u>ROUTE</u>	<u>ENTRY MADE VIA:</u>
Inhalation:	Airborne dust containing heavy metal radionuclides.
Ingestion:	Airborne dust containing heavy metal radionuclides/contaminants. Improper or poor personal hygiene practices.
Eye and Skin:	Direct contact with contaminants. Improper or poor personal hygiene practices. Airborne dust containing heavy metal/radionuclide contaminant. Cuts and abrasions.
Direct Exposure:	Penetrating gamma radiation in air and soil.

4.2 PHYSICAL HAZARDS

Before field activities begin, the HSC will conduct a Site reconnaissance to identify any real or potential hazards created from Site activities. Physical hazards inherent to construction activities and power-operated equipment may exist.

4.2.1 Heat Stress

Field activities in hot weather create a potential for heat stress. The warning symptoms of heat stress include fatigue; loss of strength; reduced accuracy, comprehension and retention; and reduced alertness and mental capacity. To prevent heat stress, personnel shall receive adequate water supplies and electrolyte replacement fluids, and maintain scheduled work/rest periods.

The Field Team Leader or designee shall continuously visually monitor personnel to note for signs of heat stress. In addition, field personnel will be instructed to observe for symptoms of heat stress and methods on how to control it. One or more of the following control measures can be used to help control heat stress.

- Provision of adequate liquids to replace lost body fluids. Employees must replace body fluids lost from sweating. Employees must be encouraged to drink more than the amount required to satisfy thirst, 12 to 16 ounces every half hour is recommended. Thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement. Replacement fluids can be commercial mixes such as Gatorade.
- Establishment of a work regimen that will provide adequate rest periods for cooling down. This may require additional shifts of workers.
- Breaks should be taken in a cool and shaded rest area (77 degrees is best).
- Employees shall remove impermeable protective garments during rest periods.
- Employees shall not be assigned other tasks during rest periods.
- All employees shall be informed of the importance of adequate rest, acclimation, and proper diet in the prevention of heat stress.

4.2.2 Cold Stress

Field activities are not anticipated during cold weather; however, if the field activities occur during a period when temperatures average below freezing, the following guidelines will be followed.

Persons working outdoors in temperatures of 40 degrees and below may suffer from cold exposure. During prolonged outdoor periods with inadequate clothing, effects of cold exposure may even occur at temperatures well above freezing. Cold exposure may cause severe injury by freezing exposed body surfaces (frostbite) or result in profound generalized cooling, possibly causing death. Areas of the body which have

high surface area-to-volume ratios such as fingers, toes and ears are the most susceptible to frostbite.

Two factors influence the development of a cold injury: ambient temperature and the velocity of the wind. Wind chill is used to describe the chilling effect of moving air in combination with low temperature. For instance, 10° F with a wind of 15 miles per hour (mph) is equivalent in chilling effect to still air at -18°F.

As a general rule, the greatest incremental increase in wind chill occurs when a wind of 5 mph increases to 10 mph. Additionally, water conducts heat 240 times faster than air. Thus, the body cools suddenly when external chemical-protective equipment is removed if the clothing underneath is perspiration-soaked.

Local injury resulting from cold is included in the generic term "frostbite". There are several degrees of damage. Frostbite of the extremities can be categorized into:

- Frost nip or incipient frostbite: Characterized by sudden blanching or whitening of skin.
- Superficial frostbite: Skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient.
- Deep frostbite: Tissues are cold, pale, and solid; extremely serious injury.

Prevention of frostbite is vital. Keep the extremities warm. Wear insulated clothing as part of one's protective gear during extremely cold conditions. Check for symptoms of frostbite at every break. The onset is painless and gradual--you might not know you have been injured until it is too late.

To administer first aid for frostbite, bring the victim indoors and rewarm the areas quickly in water 95° to 100°F. Give individual a warm drink--not coffee, tea, or alcohol. The victim should not smoke. Keep the frozen parts in warm water or covered with warm clothes for 30 minutes, even though the tissue will be very painful as it thaws; then elevate the injured area and protect it from injury. Do not allow blisters to be broken. Use sterile, soft, dry material to cover the injured areas. Keep victim warm and get immediate medical care.

4.2.3 Electrical Hazards

Overhead power lines, downed electrical wires, buried cables and improper use of electrical extension cords can pose a danger of shock or electrocution. All Site personnel should immediately report to the Field Team Leader any condition that could result in a potential electrical hazard.

The Field Team Leader will notify Site personnel during the safety meetings of the locations of known underground cables and utilities.

4.2.4 Noise Hazard

Operation of equipment may present a noise hazard to workers. Site personnel will utilize hearing protection when noise levels are determined to be in excess of 29 CFR 1910.95 requirements. Noise monitoring will be performed to determine noise levels.

4.2.5 Overt Chemical Exposure

Typical response procedures include:

- SKIN CONTACT:** Use copious amounts of soap and water. Wash/rinse affected area thoroughly, then provide appropriate medical attention. Eye wash will be provided on-site at the work zone and support zone as appropriate. If affected, eyes should be continuously flushed for a minimum of 15 minutes.
- INHALATION:** Move to fresh air and transport to hospital. Decontaminate as other actions permit.
- INGESTION:** Transport to emergency medical facility. Decontaminate as permitted by other requirements.
- PUNCTURE WOUND OR LACERATIONS:** Transport to emergency medical facility. Field Team Leader will provide Material Safety Data Sheets (MSDS) to medical personnel as requested. Decontaminate as permitted by other requirements.

4.2.6 Adverse Weather Conditions

In the event of adverse weather conditions, the Field Team Leader will determine if work can continue without endangering the health and safety of field workers. Some items to be considered before determining if work should continue are:

- Potential for heat stress and heat-related injuries.
- Potential for cold stress and cold-related injuries.
- Treacherous weather-related working conditions.
- Limited visibility.
- Potential for electrical storms or high winds.

4.3 MEDICAL EVALUATION AND SURVEILLANCE PROGRAM

All field project personnel shall receive a medical evaluation in accordance with 29 CFR 1910.120 and Appendix A. Personnel who receive a medical evaluation will be notified by the medical contractor as to the outcome of their evaluation. This will be in the form of a confidential report addressed to the individual and will contain a breakdown of the clinical findings. In addition, it will indicate any areas of concern which would justify further medical consultation by the individual's personal physician. In the event that the areas of concern are of a severe nature, a follow-up notification will be made to the individual by the medical consultant to answer any questions the employee may have.

4.3.1 Dosimetry/Personnel Monitoring

All project personnel shall participate in a dosimetry program administered by the Project Health Physics Personnel. (The dosimetry program shall comply with 32 IAC 340¹, i.e. dosimeters shall be processed by a dosimetry processor accredited by the National Voluntary Laboratory Accreditation Program.) The Project Health Physics Personnel shall maintain records of all radiation exposures incurred by field personnel including all contractors. These records will be maintained in an up-to-date manner to comply with the requirements of 32 IAC 340.4010. The HSC shall review the results of personal exposure monitoring to determine compliance with exposure limit requirements.

4.3.2 Requirement for Dosimetry

Personal dosimetry is required for anyone who enters a radiologically controlled area in which he/she may receive in one calendar year a dose in excess of 10% of the limits in 32 IAC 340. Any person who works in a radiation area will be required to have a personal dosimeter. As a matter of policy, all individuals shall be required to use a dosimeter (either self-reading type, film badge or Thermoluminescence Detector (TLD)) whenever they enter the Exclusion Zone.

4.3.3 Bioassay

Bioassay is the determination of the types and amounts of radioactive materials which are inside the body. By analyzing the rate of deposition, the rate of excretion, and any other available information regarding placement in the body, internal exposures from radioactive materials can be estimated.

Procedures for bioassay will be consistent with the previous Lindsay Light Health and Safety Plan. Bioassays are not anticipated to be required for the excavation and removal activities proposed, based on levels documented as present. The determination of the need for bioassay will be based on dosimetry monitoring and review and recommendations from the Project Health Physics personnel.

¹ The IDNS regulations are usually more restrictive than US Nuclear Regulatory Commission (NRC) regulations. However, if there is a conflict between IDNS and NRC regulations, the NRC regulations will be used to determine compliance.

4.3.4 Emergency Medical Treatment

Emergency first aid should be administered on-site as appropriate. The individual should be decontaminated if possible, depending on the severity of the injury, and transported to the nearest medical facility, if needed. Treatment of the injury is of primary concern and decontamination a secondary concern. Levels of radioactive contamination at the Site could be acutely hazardous if decontamination is not undertaken during an emergency situation. The Field Team Leader will complete the appropriate incident report, if warranted. See Section 4.4, Accident and Incident Reporting.

An emergency first-aid station will be established and will include a first-aid kit for on-site emergency first aid.

Provisions for emergency medical treatment shall be integrated with the following guidelines:

- At least one individual qualified to render first aid and Cardiopulmonary Resuscitation (CPR) will be assigned to each shift.
- Emergency first aid stations in the immediate work vicinity.
- Conspicuously posted phone numbers and procedures for contacting ambulance services, fire department, police, and medical facilities.
- Maps and directions to medical facilities.
- Conspicuously posted evacuation routes and gathering area locations shall be posted around the Site.

4.4 ACCIDENT AND INCIDENT REPORTING

All accidents, injuries, or incidents will be reported to the HSC. This accident/incident will be reported as soon as possible to the employee's supervisor. An Accident/Incident Form will be completed by the Field Team Leader, and a copy will be forwarded to the Project Manager. A copy of the form is shown as Figure 4.1.

Accident/Exposure Investigation Report (Page 1 of 3)

[illegible]

Make additional copies of this form as needed. (form provided courtesy of Safety Publications of California © 1990)

Figure 4.1

Accident/Exposure Investigation Report (Page 2 of 3)

Accident/Exposure Investigation Report

Accident Description

Date & Time

Location

Employees Involved

Preventive Action Recommendations

Corrective Actions Completed	Manager Responsible	Date Completed

—Employee Lost Time—Temporary Help—Cleanup—Repair—Discussion—

Accident Cost Analysis	Investigation	Compliance	Total Cost
-------------------------------	----------------------	-------------------	-------------------

Medical

Production Loss

Report Prepared By

Date Completed

Safety Committee Review

Yes

No

Corrective Action

Date Started

Safety Communication Notice Prepared

Date

Safety Director Signature

Figure 4.1

Accident/Exposure Investigation Report (Page 3 of 3)

Accident/Exposure Investigation Report

Accident Description

Date & Time

Location

Employees Involved

Employee Interview/Statement—Injured Employee—Witness

Employee Name

Interviewed By

Accident Diagram/Photographs

5. TRAINING

All Site personnel shall be trained and certified in accordance with 29 CFR 1910.120.

5.1 PROJECT- AND SITE-SPECIFIC TRAINING

Prior to project start-up, all assigned personnel shall receive an initial project- and site-specific training session. This training shall include, but not be limited to, the following areas:

- Review of the Health and Safety Plan;
- Review of applicable radiological and physical hazards;
- PPE levels to be used by Site personnel;
- Site security control;
- Emergency response and evacuation procedures;
- Project communication;
- Required decontamination procedures;
- Prohibited on-site activities;
- Instructions to workers in accordance with 10 CFR 1912; and
- U.S. NRC Regulatory Guide 8.13 and Declared Pregnant Woman Policies (Females).

5.2 VISITOR ORIENTATION

All non-essential personnel and visitors who plan to enter the exclusion zone will be briefed on the HASP requirements and 10 CFR 1912 requirements prior to entry with a trained Site escort. In addition, female visitors will be instructed regarding U.S. NRC Regulatory Guide 8.13 and Declared Pregnant Woman Policies.

5.3 SAFETY "TAILGATE" MEETINGS

Before the start of work each day, the Field Team Leader will assemble the Site personnel for a brief safety meeting. The purpose of these meetings will be to discuss

project status, problem areas, conditions, safety concerns, PPE levels and to reiterate HASP requirements. The Field Team Leader will complete a Safety Meeting Report (Figure 5.1) to indicate the contents of the meeting and the attendees.

5.4 FIRST AID

At least one (1) individual, trained and qualified to administer first aid and CPR in accordance with American Red Cross requirements, will be present at the Site.

5.5 SAFE WORK PERMIT

Site workers in special work conditions such as confined space, hot work, trenching, or other physical hazards, must be skilled at such work and trained to recognize these as special work conditions. Confined space is defined by OSHA 1910.146. Section 13 of this HASP contains further information on the confined space program to be followed.

Figure 5.2 shows the Safe Work Permit to be completed by the HSC and signed by workers for special work conditions.

Figure 5.1

Safety Meeting Report (KM-4438-A, front side)

SAFETY MEETING REPORT KM-4438-A			DATE
DIVISION	DEPARTMENT/PLANT	DURATION OF MEETING IS <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.	
NUMBER PRESENT	NUMBER ABSENT	MEETING CONDUCTED BY	WAS MEETING REQUIRED BY REGULATION? <input type="checkbox"/> YES (DESCRIBE BELOW) <input type="checkbox"/> NO
* SUPERVISOR'S PRESENTATION	DISCUSSION OF SAFETY, WORK PRACTICES, MATERIALS, JOB PRECAUTIONS, HAZARDOUS EQUIPMENT FAMILIARIZATION, ETC. 		
EMPLOYEE FEEDBACK	COMMENTS, QUESTIONS, COMPLAINTS, ETC. 		
SUPERVISOR'S CORRECTIVE ACTION PLAN	KNOWN PLANS FOR CORRECTION, PARTS ON ORDER, ITEMS TO BE DISCUSSED WITH DEPT. HEAD, AND CORRECTION OF ITEMS PREVIOUSLY SUBMITTED 		
DEPARTMENT HEAD COMMENTS	RESOLUTION OF QUESTIONS, ITEMS OR ISSUES RAISED IN MEETING OR WITH SUPERVISOR 		
SUPERVISOR	DEPARTMENT HEAD		
FACULTY MANAGER			

Have employees attending sign on reverse side.
Forward a copy to the local Safety Department.

Safety Meeting Report (KM-4438-A, reverse side)

TO BE SIGNED BY ALL EMPLOYEES ATTENDING MEETING

I have received and understand the information and/or training indicated on the reverse side.

[illegible]

LIST ALL EMPLOYEES ABSENT FROM MEETING

[illegible]

Figure 5.2

Safe Work Permit (KM-2565-1-B, upper section of front side)

SAFE WORK PERMIT KM-2565-1-B

SHADED AREAS MUST BE COMPLETED.

COMPLETED PERMIT MUST BE POSTED
AT THE ENTRY OR WORK SITE.

PLANT/DEPARTMENT		ISSUED BY		DATE	TIME (FROM)	<input type="checkbox"/> A.M.	(TO)	<input type="checkbox"/> P.M.	
ACCEPTED BY				COMPANY/DEPARTMENT/CONTRACTOR					
RESPONSIBILITY TRANSFERRED TO (NAME)				CO-SIGNATURE (IF REQUIRED)					
LIST ALL WORKERS OR ATTACH ROSTER (OVER)				IS WORK AREA OSHA PSM REGULATED? <input type="checkbox"/> Yes <input type="checkbox"/> No					
AN ALERT, GAS RELEASE, EVACUATION, INTERRUPTION OF 8 HOURS OR MORE OR CHANGE IN WORKING CONDITIONS SUSPENDS THIS PERMIT. (Permit must be reissued or reauthorized)									
SECTION 1 GENERAL AREA WORK PERMIT	1. WORK LIMITED TO THE FOLLOWING: (DESCRIPTION & AREA/EQUIPMENT)								
	2. ON-SITE INSPECTION CONDUCTED/ALL LOCKS OR TAGS ATTACHED, IF REQUIRED/ENVIRONMENTAL IMPACT OF JOB CONSIDERED						PERMIT ISSUER INITIALS	PERMIT REC INITIALS	
	3. SPECIAL HAZARDS TO PROTECT AGAINST <input type="checkbox"/> NONE MSDS AVAILABLE <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A								
	CHEMICALS (NAME)								
	<input type="checkbox"/> Flammable <input type="checkbox"/> Noise <input type="checkbox"/> Hot Water/Steam <input type="checkbox"/> Thermal Burn <input type="checkbox"/> Falls <input type="checkbox"/> Pinch Pts./Srp. Edges <input type="checkbox"/> Electrical <input type="checkbox"/> Toxic <input type="checkbox"/> Corrosive <input type="checkbox"/> Heat Stress <input type="checkbox"/> Elect/High Vltg. Line <input type="checkbox"/> Asbestos <input type="checkbox"/> Other <input type="checkbox"/> Hydraulic/Pneumatic <input type="checkbox"/> Skin Contact <input type="checkbox"/> Reactive <input type="checkbox"/> High Pressure <input type="checkbox"/> Inert Atmosphere <input type="checkbox"/> Radiation <input type="checkbox"/> Other (magnitude)								
	4. SAFETY EQUIPMENT (OTHER THAN AREA REQUIREMENTS) <input type="checkbox"/> NONE								
	<input type="checkbox"/> Rain Suit <input type="checkbox"/> Gloves <input type="checkbox"/> Face Shield <input type="checkbox"/> Ground Fault Circuit Int. <input type="checkbox"/> Air Pack (SCBA) <input type="checkbox"/> Fire Resistant C <input type="checkbox"/> Chemical Suit <input type="checkbox"/> Hearing Protection <input type="checkbox"/> Hood <input type="checkbox"/> Barricades/Warning Signs <input type="checkbox"/> Supplied Air <input type="checkbox"/> Long Sleeves <input type="checkbox"/> Rubber Boots <input type="checkbox"/> Chemical Goggles <input type="checkbox"/> Fall Restraint Device <input type="checkbox"/> Communications Equip.(test) <input type="checkbox"/> Respirator <input type="checkbox"/> Other								
	5. THE PERSON RECEIVING THE PERMIT VERIFIES THAT ALL WORKERS:								
	A. Have been through the Plant Safety Orientation <input type="checkbox"/> Yes F. Know emergency alarms, evacuation, assembly points <input type="checkbox"/> B. Understand Applicable HAZCOM requirements <input type="checkbox"/> Yes G. Know the Procedures for Safe Job Completion <input type="checkbox"/> C. Have discussed hazards of the job and area <input type="checkbox"/> Yes H. Have inspected all tools/equipment/scaffolding <input type="checkbox"/> D. Know the location/use of safety showers/eye wash stations <input type="checkbox"/> Yes I. Understand the Housekeeping Requirements <input type="checkbox"/> E. Know the location of the phone or intercom <input type="checkbox"/> Yes PERMIT RECEIVER INITIALS								
	6. POTENTIALLY AFFECTED AREA PERSONNEL AND WORKERS NOTIFIED OF WORK TO BE DONE <input type="checkbox"/> YES <input type="checkbox"/> N/A								
7. THE FOLLOWING RESPONSIBILITIES HAVE BEEN COMMUNICATED TO THE PERSON RECEIVING THIS PERMIT: <input type="checkbox"/> Conditions For Work Stoppage <input type="checkbox"/> Performing The Work Safely <input type="checkbox"/> Completion Of Section 8 And Permit Re: <input type="checkbox"/> Crew Accountability <input type="checkbox"/> Reporting Changes That Affect Job Safety									
SECTION 2 AIR TESTS	PRIORITY TO ENTRY OR NOT WORK <input type="checkbox"/> DOES NOT APPLY	TEST IN ORDER INDICATED							
		1. Oxygen meter test performed <input type="checkbox"/> Yes <input type="checkbox"/> N/A	READING	% O ₂	RANGE	19.5-23.5% O ₂	TESTED BY	LOCATION OF TEST	TIME
		2. Combustible gases and vapors test <input type="checkbox"/> Yes <input type="checkbox"/> N/A	READING	% LEL	MAXIMUM	10% LEL	TESTED BY	LOCATION OF TEST	TIME
		3. Tests for toxics <input type="checkbox"/> Yes <input type="checkbox"/> N/A	READING	PPM	PERCENT	PPM	TESTED BY	LOCATION OF TEST	TIME
SECTION 3 OBSERVATION & RESCUE	<input type="checkbox"/> DOES NOT APPLY	1. Continuous monitoring for <input type="checkbox"/> Yes <input type="checkbox"/> N/A (SUBSTANCE)							
		2. Periodic tests for <input type="checkbox"/> Yes <input type="checkbox"/> N/A (SUBSTANCE)							
		<input type="checkbox"/> Duration of work <input type="checkbox"/> Area <input type="checkbox"/> Personal <input type="checkbox"/> Other							
		2. Fire/safety/confined space attendants <input type="checkbox"/> Yes <input type="checkbox"/> N/A DESIGNATED PERSON(S)							
		3. Backup rescuer(s) <input type="checkbox"/> Yes <input type="checkbox"/> N/A DESIGNATED PERSON(S)							
		4. Special rescue service/equipment required <input type="checkbox"/> Yes <input type="checkbox"/> N/A LOCATION OF SPECIAL EQUIPMENT							
		TIME (FROM) <input type="checkbox"/> A.M. <input type="checkbox"/> P.M. TIME (TO)							
		TIME (FROM) <input type="checkbox"/> A.M. <input type="checkbox"/> P.M. TIME (TO)							

Figure 5.2

Safe Work Permit (KM-2565-1-B, lower section of front side)

SECTION 4		HOT WORK		YES | NO | N/A			YES	
SECTION 4	HOT WORK	<input type="checkbox"/> DOES NOT APPLY	1. Fire Extinguisher (Type) _____ Is it full?				8. Ground lead attached to work	
			2. Survey area for combustibles and openings, holes, trenches, etc.				9. Prevention of heat exposure to gasket, seals, liners	
			3. Combustible materials removed or protected				10. Other work in area which should be stopped	
			4. Heat/spark control - tarps, covers, water, etc.				11. Material present which emits vapor when heated	
			5. Precaution taken for hidden combustibles				12. Radiant heat transfer considered	
			6. Purge gas used. Type _____				13. Equipment operating or contains original contents	
			7. Adjacent areas safe/sewers protected				14. Ducts or conveyors plugged or protected	
SECTION 5	ENERGY LOCKED/TAGGED	<input type="checkbox"/> DOES NOT APPLY	YES | NO | N/A			YES | NO		
			1. Line positively identified				9. Are all automatic valves secured in a safe position?	
			2. Line empty, drained/depurged, piping properly supported				10. Electrical panel switches locked, tagged and tested	
			3. Line/equipment cleaned and purged				11. Field switches tested	
			4. Blinds and/or block and bleed in place				12. Fuses removed/switches open	
			5. Lock(s) required (list lockout points)				13. Are belts/couplings removed?	
			6. Splash guards considered				14. Are rotating parts blocked?	
			7. Adjacent area safe. (If limited, describe below)				COMMENTS	
SECTION 6	CONFINED SPACE	<input type="checkbox"/> DOES NOT APPLY	YES | NO | N/A			YES | NO		
			1. Confined space entry required?				5. Have authorized entrants signed opposite side of this form?	
			2. Space to be entered _____				6. Have designated attendants signed opposite side of this form?	
			3. Purpose of entry _____				7. Have all necessary hazard control measures been taken?	
SECTION 7	TRENCHING/EXCAVATION	<input type="checkbox"/> DOES NOT APPLY	YES | NO | N/A			YES | NO		
			1. Has the area been inspected for underground power lines or product lines?				4. Have precautions been taken if the trench/excavation develops into a confined space?	
			2. Does the trench require shoring/bracing/support?				5. Have overhead power/product lines been removed or identified?	
			3. Has the soil been evaluated for stability?				6. Will leaking water or rain water affect the stability of the trench/excavation?	
SECTION 8	Questions to be Completed on Permit Expiration or Job Completion	<input type="checkbox"/> DOES NOT APPLY	YES | NO | N/A			YES | NO		
			1. Has the job been completed?				5. Have safety devices been reinstalled?	
			2. Has the area been cleaned of work material?				6. Has hot work area been surveyed for smoldering materials?	
			3. Have department personnel been informed job is done?				7. Special precautions, concerns or remarks?	
SECTION 8	WORKER CLOSOUT SIGNATURE		YES | NO | N/A			YES | NO		
			4. Have all locks and/or tags been removed?				COMMENTS	
TIME		DAY		MONTH		YEAR		

Safe Work Permit (KM-2565-1-B, reduction of reverse side)

I have been instructed as a confined space attendant, to strictly watch the following personnel and understand my duties.							
OBSERVERS, WATCHERS, RESCUERS	SIGNATURE	TIME IN (OUT)	DATE	SIGNATURE	TIME IN (OUT)	DATE	

I have been instructed in and am aware of the possible hazards and conditions I may encounter in this entry work.							
PERSONS AUTHORIZED TO PERFORM WORK AND OR TO ENTER CONFINED SPACE	SIGNATURE	TIME IN (OUT)	DATE	SIGNATURE	TIME IN (OUT)	DATE	

COMMENTS				

AUDIT PURPOSE ONLY	NAME OF ACTION	DATE	DEPARTMENT	DATE

CONCERNS				

CORRECTIVE ACTIONS				

COMPLETED BY	NAME	TITLE	DEPARTMENT	DATE	COMMENTS

6.5 SITE SECURITY

Only authorized personnel will be permitted on the Site in accordance with the requirements of the Site Security Plan (Appendix E to the Removal Action Work Plan) and this HASP. Visitors and other non-essential personnel may enter the work area only upon authorization by the Field Team Leader. This restricted access will ensure that the Field Team Leader can communicate with each person authorized to enter the work area.

7. PERSONNEL EXPOSURE AND AIR QUALITY MONITORING

7.1 AIR QUALITY (DUST)

Due to the nature of the principal contaminants associated with the project, dust suppression will be important as a means of minimizing exposure levels and off-site migration of contaminants. The Field Team Leader will routinely monitor the project area. The OSHA personal exposure limit (PEL) for nuisance dust is 15 mg/m³.

7.2 AIRBORNE RADIOACTIVITY MONITORING

Monitoring for airborne radioactivity exposure is as important as monitoring for external radiation exposure. Monitoring for airborne radioactivity exposure requires the following elements:

- Air sampling for radioactive particulates,
- Recordkeeping regarding personnel work locations and time in location, and
- Respiratory protective equipment records regarding devices used by workers in airborne radioactivity areas.

By closely monitoring these three elements, a continuous record of personnel exposure to airborne radioactivity is maintained.

Lapel samplers worn for personal air monitoring can be utilized for airborne radioactivity monitoring. Air filters shall be analyzed on a daily basis to determine potential contributions to dose from radionuclides. It is expected that naturally occurring radon and thorium daughters will interfere with analyses. Additional evaluation of samples shall be performed when determined necessary based upon elevated results. Such analyses shall be performed after allowing time for decay of some interfering radionuclides.

Downwind monitoring of the excavation areas for radioactive particulate activity also will be performed. High volume air samplers shall run continuously during operations and be evaluated on a daily basis for gross alpha activity. Comparisons will be made to 32 IAC 340 Appendix A to ensure that adequate radiological controls are in place for workers and the general public. As low as reasonably achievable (ALARA) concepts will be utilized when considering protective measures to ensure that internal exposures are minimized, while also considering the effects of such protective measures with respect to external exposures. Controls on the Site such as wetting of soils and procedural changes, will be employed prior to the prescription of respiratory protective equipment.

Time decay of interfering nuclides generally refers to radon-222 decay and daughters but may also include thoron decay. The specific times for decay of samples is best addressed in procedures rather than in the health and safety plan. Air samples will be decayed a minimum of 5 hours to allow for counting without interference from radon-222 and its daughters. Thoron (Rn-220), if present in significant amounts, will require decay for up to 4 days to allow for decay of it is Pb-212 daughter (10.6 hour half life).

After filters have been collected and decayed overnight, there will be a morning count of the filter that will serve to identify high gross counts for the previous day. This will alert health & safety staff of a potential problem which they can investigate more promptly. The count, after 4 days decay, will serve to be the official measurement of Th-Alpha.

7.3 INTERNAL MONITORING

Internal monitoring to determine intakes of radioactive material will be performed as needed based upon the results of the air sampling program. Bioassay methods to be considered should include in-vivo, as well as in-vitro, assessments. Routine bioassay of workers is not anticipated based upon the low concentrations of radioactivity in soils to be excavated.

7.4 EXTERNAL RADIATION MONITORING

External radiation monitoring of workers will be performed using film badges or thermoluminescent dosimeters. Dosimetry will be provided and processed by a service holding National Voluntary Laboratory Accreditation Program (NVLAP) certification. Pocket dosimeters may also be utilized for visitors and other infrequent personnel requiring access to the Site.

7.5 RADIOLOGICAL SURVEYS

Radiological surveys will be performed to ensure that radiation levels and contamination levels are within regulatory limits for workers and the general public. Radiation surveys will consist of ambient gamma surveys using micro-R meter or Geiger detectors, as appropriate, and contamination surveys. Airborne radioactivity measurements will be performed as described in the Air Monitoring Plan (Appendix B to the Removal Action Work Plan).

7.6 CONTAMINATION MONITORING

Samples shall be obtained periodically in work areas to ensure that radioactivity is present at acceptable levels and is prevented from leaving the Site. Decontamination of elevated areas will be performed to maintain contamination at levels that are ALARA.

Before leaving the exclusion zone, Site personnel shall be checked through use of a hand-held frisker to ensure that contamination is not present on skin or clothes. The Field Team Leader will be immediately informed regarding any contamination on individuals and will initiate appropriate decontamination techniques. Proper disposition of contaminated personal effects and clothing also will be the responsibility of the Field Team Leader.

7.7 TOTAL ORGANIC VAPOR MONITORING

In addition to the radiological contaminants, there is a slight potential of encountering organic vapors. Organic vapors were encountered near the water table during previous investigation at the Site. Routine screening for total organic vapors will be conducted with a photoionization detector (PID), or similar type equipment, on a daily basis. The screening will evaluate ambient photoionization volatile organic vapors and some semi-volatile organic vapors.

Total organic vapors in ambient air will be obtained periodically with a PID during daily field activities. The PID provides real-time readings of exposure to volatile organics and some semi-volatile organics. Measurements will be made daily, prior to activities, to determine background levels. Monitoring measurements will be taken when:

- operations change,
- work moves to a different portion of the Site, and
- personnel observe contaminated materials.

These screening operations will be used to identify conditions requiring an upgrade to full-face respirators as described in Section 7.8.2.

7.8 ACTION LEVELS

7.8.1 Radiological Action Levels

Radiological action levels for on-site workers will be determined by smear/swipe measurements as well as airborne particulate monitoring for the presence of radioactivity. The Field Team Leader will perform radiological monitoring. The radioactive contamination on the Site is particulate and insoluble in water. Therefore, there will be no fixed contamination on the workers. Action levels as determined by radioactive monitoring can be found in Table 7.1.

To avoid the need for upgrade of personal protection equipment due to airborne contamination, engineering controls such as the use of water to minimize dust levels will be implemented as necessary during excavation and restoration activities.

7.8.2 Organic Vapors Action Levels

Grand Pier LLC is taking a conservative approach to organic vapor monitoring at the Site. A PID will be used to monitor for organic vapors. Operations will be discontinued if the PID reads 5 ppm¹ or greater and the area will be evacuated. The Site Health and Safety Officer will retest the area wearing a full-face respirator. Operations will not resume until the PID reads less than 5 ppm, and remains below 5 ppm.

¹PID level obtained for Benzene from NIOSH Pocket Guide to Chemical Hazards.

TABLE 7-1

ACTION LEVELS AS DETERMINED BY RADIOACTIVITY

Note: Personnel shall not be exposed to airborne radioactivity such that their weekly intake exceeds 12 Derived Air Concentration (DAC)-hours without prior approval of the Field Team Leader or designee.

Level of protection may be increased to Level C (full-face air purifying respirator) when airborne monitoring indicates that contamination levels have reached 30% of the DAC. All assessments shall incorporate ALARA principles. Engineering controls shall be used prior to assignment of respiratory protective equipment.

Signs shall be posted at entrances to areas where airborne radioactivity levels exceed, or have the potential to exceed, 25% of the DAC.

Radiation Type	Action Level	Level of Respiratory Protection/Action
a. Contamination on smear samples	60 pCi/100 cm ² gross alpha ^(a)	Consider modified Level C (full-face APR) based upon ALARA evaluation.
b. Airborne Radioactivity	30% DAC ^(b)	Consider Level C (full-face APR) based upon ALARA evaluation. Ensure proper posting. Consider internal monitoring
c. Ambient Gamma (work areas)	5 mrem/hr ^(c)	Consider procedures for shielding of soils. Ensure proper posting.
d. Ambient Gamma (off-site areas)	2 mrem/hr ^(d)	Implement immediate controls to reduce dose equivalent rate.

Notes

- (a) This is approximately 3 times the unrestricted release criteria in the NRC Regulatory Guide 1.86. If any dry-brushing or otherwise abrasive-type decontamination of the sampled equipment is required, the Action Level shown shall require modified Level C (full-face APR).
- (b) Potential Airborne Radioactivity Area as defined in 10 CFR 20. Workers with 1000 DAC-hours per year to date must wear modified Level C (full-face APR) until the end of the calendar year.
- (c) The ambient gamma dose equivalent rate action level of 5 mrem/hr stems from the 10 CFR 20 radiation area definition. If the ambient gamma dose equivalent rate reaches 2 mrem/hr, one or more of the following actions will be implemented: The source may be shielded; the working distance from the source may be increased; or the worker's exposure time may be limited.
- (d) The ambient gamma action level for off-site is based upon the 10 CFR 20 requirements to maintain dose equivalent rates in unrestricted areas such that they do not exceed 0.002 rem in any one hour.

8. PERSONAL PROTECTIVE EQUIPMENT

It is anticipated that most excavation activities^{in designated exclusion zones} can be conducted in Level D personal protective equipment (PPE), with a contingency upgrade to Level C, based on the action levels listed in Section 7. Level C will be used when required by Special Work Permits, or when directed by the Field Team Leader.

Level D personal protective clothing and equipment for excavation activities includes:

- Coveralls,
- Hard hat,
- Chemical resistant, OSHA approved safety shoes/boots,
- Cotton or leather gloves,
- Safety glasses, and
- Dust mask (optional).

Level C protective clothing and equipment includes:

- Full-face air-purifying respirator (NIOSH/MSHA approved) fitted with radionuclides/HEPA cartridges and/or organic vapor cartridges, depending on which action levels are exceeded (see Section 7 of this HASP),
- Coveralls,
- Tyvek coveralls - required in areas when splashing by contaminated soils or water is a possibility,
- Cotton or leather gloves,
- Disposable latex inner gloves - required in areas when splashing by contaminated soils or water is a possibility,
- Nitrile outer gloves (taped) - required in areas when splashing by contaminated soils or water is a possibility,
- Chemical-resistant steel toe boots, and
- Hard hat.

Action levels used to determine the need to upgrade or downgrade the levels of protection are described in Section 7 of this HASP.

9. CONTAMINATION REDUCTION PROCEDURES

9.1 EQUIPMENT

Portable equipment will be decontaminated with soap and water and rinsed with tap water. Heavy equipment will be steam-cleaned with water and, if necessary, a detergent solution. It is not anticipated that chemical cleaning will be necessary for decontamination.

9.2 PERSONNEL

If levels of radioactivity show that individuals can remove coveralls and other protective clothing and equipment before leaving the work-site and, thus complete decontamination, the individuals may leave the Site. If, however, levels of radioactivity show that individuals cannot achieve decontamination by the removal of coveralls and showering is required, they will be dressed in clean coveralls, boots and gloves and be transported to Northwestern Memorial Hospital* to complete decontamination.

If substantial skin contamination occurs on an individual working with radioactive materials, the following specific procedures should be followed to prevent fixation of the material in the skin or absorption of the radioactivity through the skin.

Immediate Action: Notify the HSC or Field Team Leader, who will supervise the decontamination. If contamination is spotty, the HSC or Field Team Leader will supervise the cleaning of the individual spots with swabs, soap, or water. If contamination is general, the HSC or Field Team Leader may recommend washing the area gently in warm or cool water (not hot) using hand soap (not detergent) for one minute. Rinse, dry, and monitor for radioactivity. This soap wash step may be repeated three times.

Evaluation: If the above procedure fails to remove all the skin contamination, the treatment should cease. An evaluation of the skin contamination should be performed by the HSC or Field Team Leader including an estimate of the dose commitment to the skin, and the quantity and identity of the nuclides contaminating the skin. If additional decontamination steps are necessary, they are performed and documented by the HSC. The guidelines for Personnel Decontamination in the Radiological Health Handbook, HEW 1970, beginning on page 194, can be used as applicable. CAUTION: Do not use chemicals for personnel decontamination until full evaluation of the contamination is made by the HSC or Field Team Leader.

* Northwestern Memorial Hospital has provided tentative approval (March 17, 2000 Dr. Mark Zimmer, Safety Dept.) for use as decontamination as necessary. Final approval will be obtained before resuming work.

9.3 CONTAMINATION PREVENTION

Work practices that minimize the spread of contamination will reduce worker exposure and help ensure valid sample results by precluding cross-contamination. Procedures for contamination avoidance include:

- knowing the limitations of all personal protective equipment being used,
- avoiding walking through areas of obvious or known contamination,
- refraining from handling or touching contaminated materials directly. Do not sit or lean on potentially contaminated surfaces,
- ensuring personal protective equipment has no cuts or tears prior to donning,
- fastening all closures on suits, covering with tape if necessary,
- taking steps to protect against any skin injuries,
- staying upwind of airborne contaminants, and
- when working in contaminated areas, refraining from eating, chewing gum, smoking, or engaging in any activity from which contaminated materials may be ingested.

9.4 DISPOSAL PROCEDURES

All discarded materials, waste materials, or other field equipment and supplies should be handled in such a way as to preclude the spread of contamination, creating a sanitary hazard, or causing litter to be left on-site. All potentially contaminated waste materials (e.g., clothing, gloves) shall be monitored and segregated in accordance with monitoring results into either radioactive or non-radioactive waste. Appropriate labels shall be affixed to all containers of radioactive materials.

10 GENERAL WORK PRECAUTIONS

10.1 GENERAL WORK PRECAUTIONS

The following general work precautions apply to all Site personnel.

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in the work area.
- Hands and face must be thoroughly washed upon leaving the work area. Wash water will be provided at the Site for this purpose.
- Whenever levels of radioactivity warrant, the entire body should be thoroughly washed, as soon as possible, after the protective coveralls and other clothing are removed as part of the decontamination process.
- No facial hair that interferes with a satisfactory fit of the mask-to-face-seal is allowed on personnel required to wear respirators.
- Contact with contaminated or suspected contaminated surfaces should be avoided. Whenever possible, do not walk through puddles, leachate, discolored surfaces, kneel on ground, lean, sit, or place equipment on drums, containers, or the ground.
- Medicine, drugs and alcohol may interfere with or impair judgment and reaction times. Therefore, usage of prescribed drugs must be specifically approved by a qualified physician and made known to the Field Team Leader prior to an individuals' presence on the work-site. Alcoholic beverage intake is strictly prohibited at the Site and prior to work.
- All personnel must be familiar with standard operating procedures and any additional instructions and information contained in the HASP.

11. SANITARY FACILITIES

11.1 POTABLE WATER

- a. An adequate supply of potable drinking water shall be maintained at all times immediately outside the Site. Drinking water shall meet all federal, state and local health requirements.
- b. Drinking water shall be supplied to project personnel via approved dispensing sources.
- c. Paper cups shall be permitted for the drinking of potable water supplies.
- d. Drinking water dispensers shall be clearly marked and shall, in no way, have the potential for contamination from non-potable supplies.
- e. Site personnel must be fully decontaminated prior to approaching the drinking water supply.

11.2 TOILET FACILITIES

- a. Adequate toilet facilities shall be provided at the Site.
- b. These facilities shall be in the form of portable chemical toilets.
- c. Routine servicing and cleaning of the toilets should be established with the selected contractor and shall be in accordance with federal, state, and local health regulations.
- d. Site personnel must be fully decontaminated prior to approaching the toilet facilities.

11.3 WASHING AREAS

- a. Adequate washing areas shall be provided for personal use within the work area.
- b. Washing areas shall be maintained in a sanitary condition and will be provided with adequate supplies of soap, towels for drying, and covered waste receptacles.
- c. Washing areas shall be maintained and sanitized daily.
- d. No eating, drinking or smoking shall be permitted in the work area. This policy will be strictly enforced by the Field Team Leader.

12. FIRE CONTROL EQUIPMENT

An adequate number of approved portable fire extinguishers (class rated A, B and C) shall be readily available at the Site at all times.

All Site personnel shall be trained in the use of the extinguishers. Extinguishers shall only be used on outbreak stage fires or fires of minor nature. The local fire department shall be contacted in the event of a larger fire and Site evacuation procedures should be commenced in accordance with the procedures described in the Emergency Contingency Plan.

13. CONFINED SPACE PROGRAM

13.1 PURPOSE

In the event that confined space work is a necessity, a Confined Space Program will be implemented. Training in the recognition of confined spaces is a component of the health and safety training program.

The purpose of the Confined Space Program is to establish procedures to protect personnel from this serious hazard in the course of their work; and at a minimum, to comply with 29 CFR OSHA 1910.146. This document assigns responsibilities and sets standards for personnel engaged in activities where confined spaces may be present.

13.2 RESPONSIBILITIES

13.2.1 Health and Safety Coordinator

The Health and Safety Coordinator administers the Confined Space Program. The Health and Safety Coordinator's responsibilities include:

- Review of the HASP for potential confined space hazards and design alternative approaches to accomplish the confined space tasks;
- Coordinating and managing the Confined Space Program in the event one is required;
- Establishing priorities for implementation of the program;
- Assisting with recognition and implementation of the Confined Space Program;
- Advising project management on confined space issues; and
- Communicating the Confined Space Program to personnel by training related to specific Site activities.

13.2.2 Project Manager

The Project Manager directs the application of the Confined Space Program to project work. The Project Manager is responsible for:

- Working with the Health and Safety Coordinator to prepare information describing activities that might be conducted in a confined space area;

- Assuring that all personnel engaged in project activities are familiar with the definition of a confined space;
- Assuring that personnel are familiar with the Confined Space Program, and that project activities are conducted in compliance with the Confined Space Program;
- Assuming the responsibilities of the Field Team Leader if another person is not assigned these responsibilities.

13.2.3 Field Team Leader

The Field Team Leader is responsible for the implementation of the Confined Space Program on-site during field activities. The Field Team Leader is responsible for:

- Overseeing implementation of the Confined Space Program during field operations; and
- Reporting confined space work activity, and any violations of the Confined Space Program, to the Project Manager and the Health and Safety Coordinator.

13.2.4 Personnel

Personnel are responsible for:

- Familiarizing themselves with the Confined Space Program and following it;
- Becoming familiar with the criteria for determining a confined space, and with the monitoring, permitting, and other requirements of the program; and
- Reporting immediately a confined space condition to the Field Team Leader.

13.3 DEFINITION OF A CONFINED SPACE

Confined space means a space that:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work;
2. Has limited or restricted means for entry or exit (such as pits, storage bins, hoppers, crawl spaces, and storm cellar areas); and

3. Is not designed for continuous employee occupancy.

Any workspace meeting all of these criteria is a confined space and the Confined Space Program must be followed.

13.4 CONFINED SPACE ENTRY PROCEDURES

13.4.1 Safety Work Permit Required

All spaces shall be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise. The Safe Work Permit for entry into a confined space must be completed before work begins; it verifies completion of the items necessary for confined space entry. The Permit will be kept at the Site for the duration of the confined space work. If there is an interruption of work, or the alarm conditions change, a new Permit must be obtained before work begins.

A permit is not required when the space can be maintained for safe entry by 100% fresh air mechanical ventilation. This must be documented and approved by the Health and Safety Coordinator. Mechanical ventilation systems, where applicable, shall be set at 100% fresh air.

The Field Team Leader must certify that all hazards have been eliminated on the Entry Permit. If conditions change, a new permit is required.

13.4.2 Pre-entry Testing for Potential Hazards

a. Surveillance

Personnel first will survey the surrounding area to assure the absence of hazards such as contaminated water, soil, or sediment, barrels, tanks, or piping where vapors may drift into the confined space.

b. Testing

No personnel will enter a confined space if any one of these conditions exists during pre-entry testing. Determinations will be made for the following conditions:

1. Presence of toxic gases or dusts: Equal to or more than 5 parts per million (ppm) on the organic vapor analyzer with an alarm, above background outside the confined space area; or other action levels for specific gases, vapors, or dusts as specified in the Health and Safety Plan and the Confined Space Permit based on knowledge of Site constituents;
2. Presence of explosive/flammable gases: Equal to or greater than 10% of the Lower Explosive Limit (LEL) as measured with a combustible gas indicator or similar instrument (with an alarm); and

3. Oxygen Deficiency: A concentration of oxygen in the atmosphere equal to or less than 19.5% by volume as measured with an oxygen meter.

Pre-entry tests results will be recorded and kept at the Site for the duration of the job by the Field Team Leader. Affected personnel can review the test results.

c. Authorization

Only the Field Team Leader and the Health and Safety Coordinator can authorize any personnel to enter into a confined space. This is reflected on the Safe Work Permit for entry into a confined space. The Field Team Leader must assure that conditions in the confined space meet permit requirements before authorizing entry.

d. Safe Work Permit

An Safe Work permit for confined space entry must be filled out by the Health and Safety Coordinator or Field Team Leader. A copy of the Safe Work Permit is included as Figure 5.2.

e. Attendants

One worker will stand by outside the confined space ready to give assistance in the case of an emergency. Under no circumstances will the standby worker enter the confined space or leave the standby position. There shall be at least one other worker not in the confined space within sight or call of the standby worker.

f. Observation and Communication

Communications between standby worker and entrant(s) shall be maintained at all times. Methods of communication that may be specified in the Safe Work Permit and the HASP may include voice, voice by powered radio, tapping or rapping codes, signaling tugs on rope, and standby worker's observations that activity appears normal.

13.4.3 Rescue Procedures

Acceptable rescue procedures include entry by a team of rescuers only if the appropriate self-contained breathing apparatus (SCBA) is available; or use of public emergency services.

The standby worker must be trained in first aid, CPR, and respirator use. A first aid kit should be on hand and ready for emergency use. The standby worker must be trained in rescue procedures. Retrieval of an unconscious victim in a confined space will only be conducted by trained rescue personnel. An emergency call to 911 will be initiated to assist the victim.

13.5 TRAINING

Personnel who will engage in field activities will be given annual training on the requirements and responsibilities in the Confined Space Program and on OSHA 1910.146. Only trained personnel can work in confined spaces. Workers should be experienced in the tasks to be performed, instructed in proper use of respirators, lifelines and other equipment, and practice emergency procedures and self-rescue.

Before each Site activity, the determination of confined space work will be part of the Site characterization process. Training in the site-specific confined space activities will be part of the site-specific health and safety training.

13.6 SAFE WORK PRACTICES

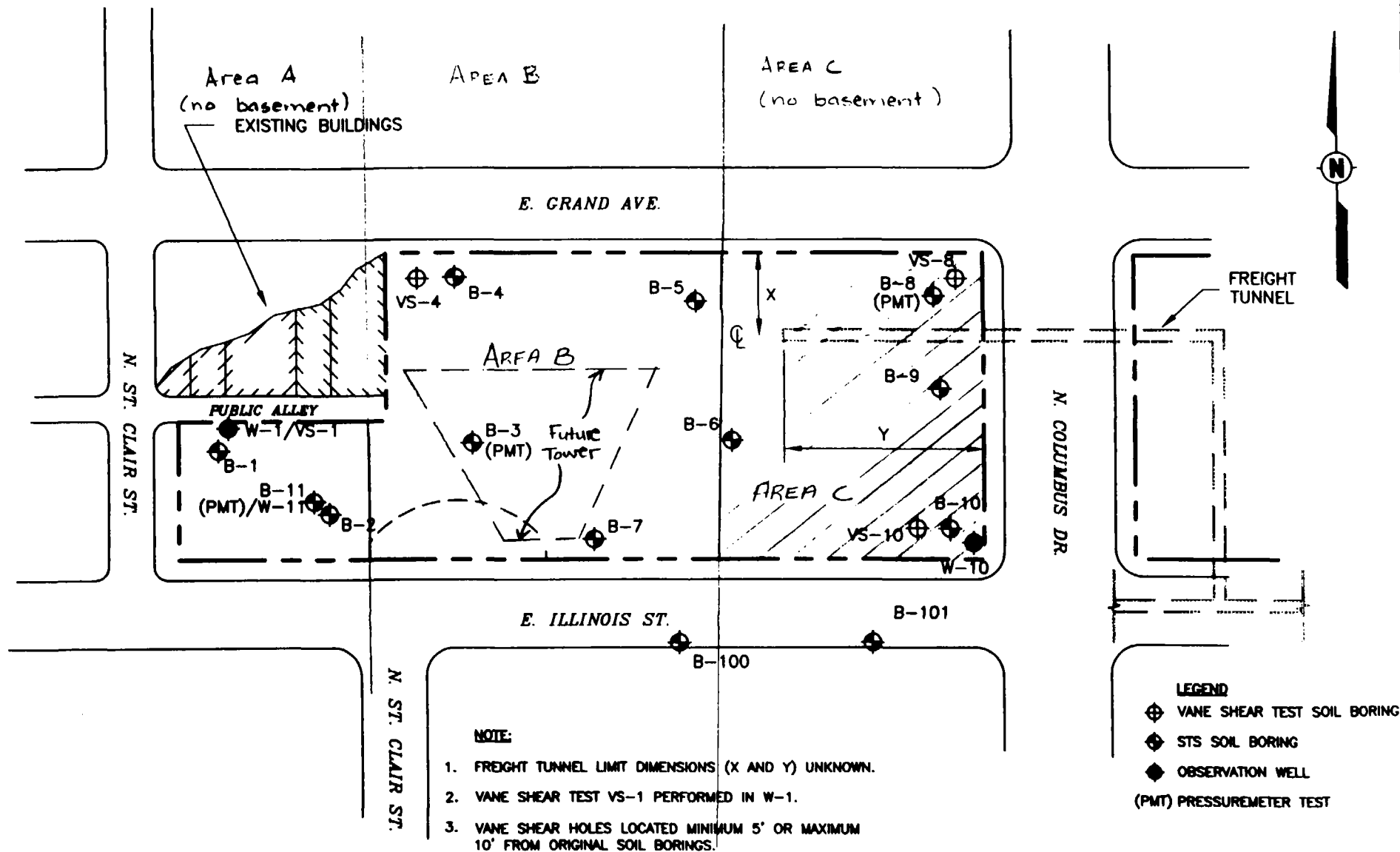
- Warning signs should be posted. These include warnings for entry permits, respirator use, prohibition of hot work and emergency procedures and phone numbers.
- Cylinders containing oxygen, acetylene or other fuel such as gasoline must be removed a safe distance from the confined space work area.
- Purging and ventilating is done before work begins to remove hazardous vapors from the space. The space should be monitored to ensure that the gas used to purge the space (e.g. tank) has also been removed. Local exhaust should be used where general exhaust is not practical.
- The buddy system is used at all times. A standby person always must be posted within sight of, or in communication with, the person inside the confined space. The standby should not enter the confined space, but instead will call for help in an emergency and not leave the post. Communication should be maintained at all times with workers inside the confined space.
- Emergency planning in the HASP and an Safe Work Permit must be approved in advance and the proper rescue equipment must be immediately available.

14. ELECTRICAL LOCKOUT/TAGOUT

The Field Team Leader must approve all work in areas requiring lockout/tagout procedures. Specific procedures and permitting requirements will be specified in the HASP, or in a revised HASP based on the need for a worker to work around electrical equipment.

All systems must be locked out and tagged before the work begins. This includes pipes, air lines, electrical equipment and mechanical devices. The equipment must be start tested and approved for use by a worker by the Health and Safety Coordinator or the Field Team Leader by start-testing to make sure the locked-out equipment does not operate.

ATTACHMENT 2
GEOTECHNICAL BORING LOGS



**SOIL BORING LOCATION DIAGRAM
PROPOSED GRAND PIER CENTER DEVELOPMENT
225 EAST ILLINOIS STREET
CHICAGO, ILLINOIS**

DRAWN BY	KKB	DATE	6-12-98
CHECKED BY	DR	DATE	6-12-98
APPROVED BY	WHW	DATE	6-12-98
CADFILE X:\PROJECTS\24418\ss\G1SS1.dwg			
06/15/1998 09:46			



STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO.

24418-SS

STS PROJECT FILE

G1SS1.dwg

SCALE

1"=100'±

FIGURE NO.

1

STS Consultants Ltd.

CLIENT

R.M. Chin & Associates, Inc.

PROJECT NAME

Grand Pier

LOG OF BORING NUMBER 8-1

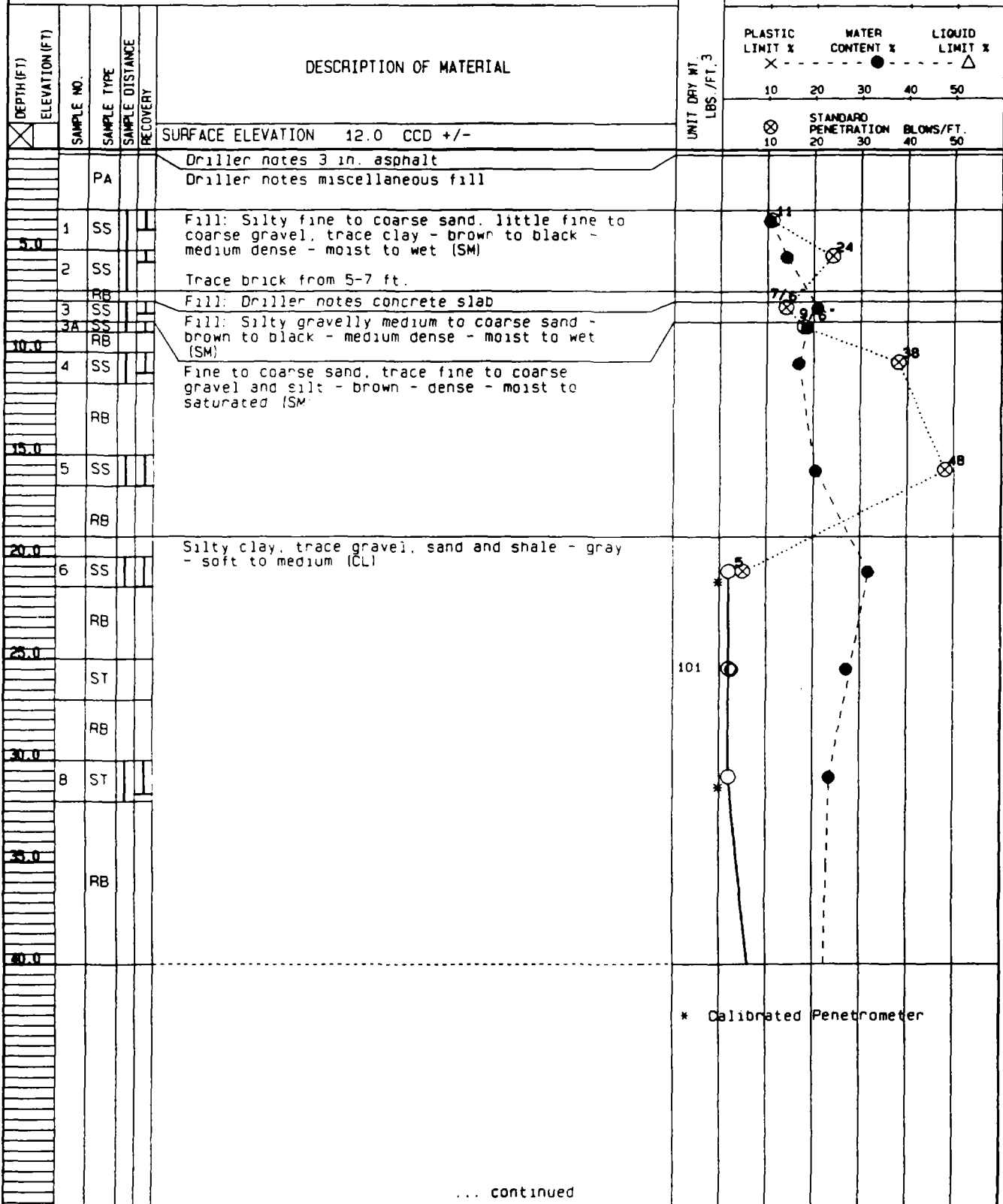
B-1

ARCHITECT-ENGINEER

TT-CBM

SITE LOCATION

NWC E. Illinois St. & N. Columbus Dr.; Chicago, IL



... continued



CLIENT
R.M. Chin & Associates, Inc.

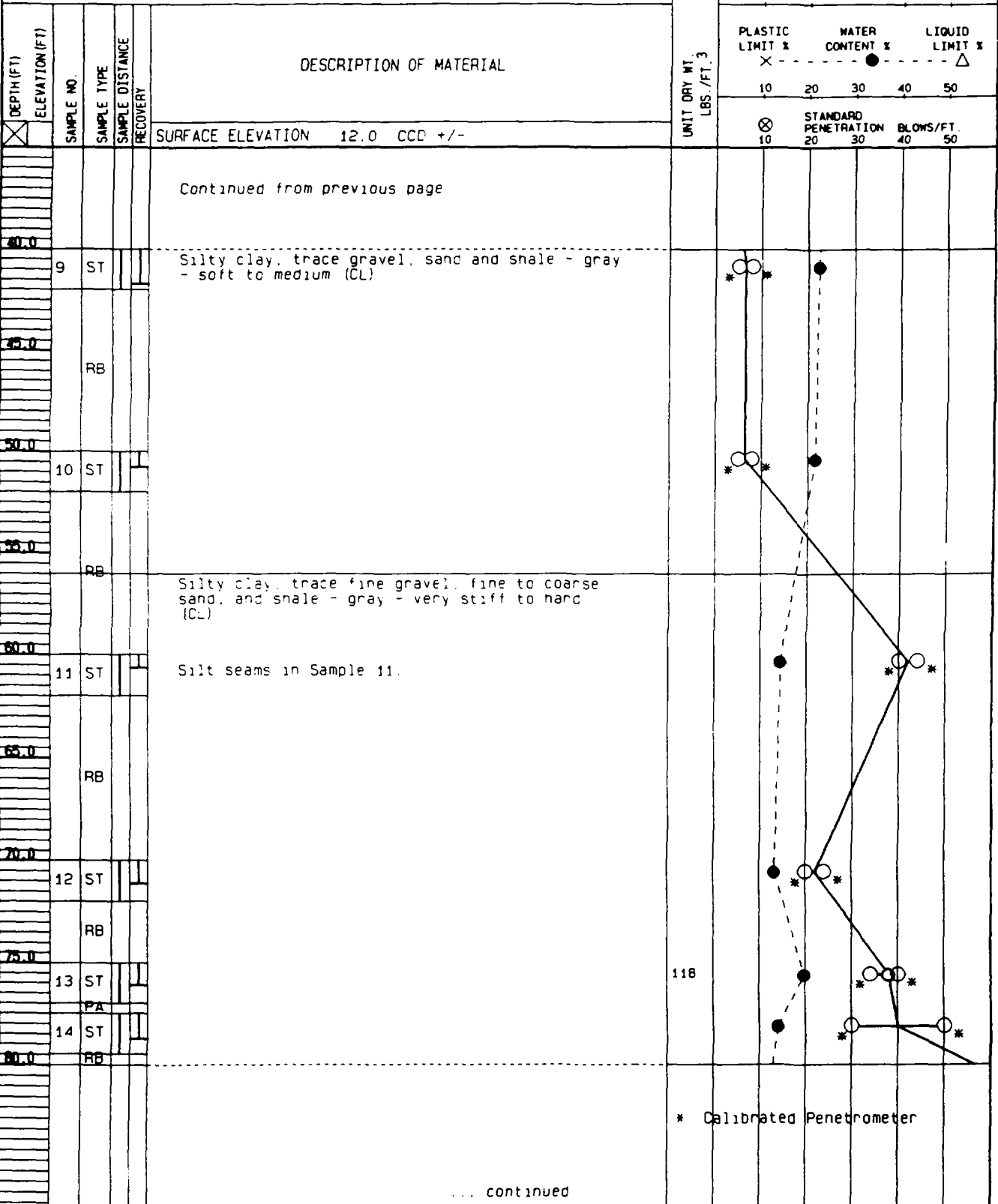
LOG OF BORING NUMBER **B-1**

PROJECT NAME
Grand Pier

ARCHITECT-ENGINEER
TT-CBM

STS Consultants Ltd.

SITE LOCATION
NWC E. Illinois St. & N. Columbus Dr.; Chicago, IL



The stratification lines represent the approximate boundary lines between soil types in-situ. The transition may be gradual.

STS JOB NO. 24418-SS SHEET NO. 2 OF 3



STS Consultants Ltd

CLIENT
R.M. Chin & Associates, Inc.

LOG OF BORING NUMBER B-1

PROJECT NAME
Grand PierARCHITECT-ENGINEER
TT-CBMSITE LOCATION
NWC E. Illinois St. & N. Columbus Dr.; Chicago, IL

SITE LOCATION NWC E. Illinois St. & N. Columbus Dr.; Chicago, IL						DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT. ³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT. ²					
DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY			1	2	3	4	5	
								PLASTIC LIMIT %		WATER CONTENT %		LIQUID LIMIT %	
								X	-	●	-	△	
SURFACE ELEVATION 12.0 CCD +/-							10	20	30	40	50		
							⊗	STANDARD PENETRATION		BLOWS/FT.			
							10	20	30	40	50		
Continued from previous page													
80.0		15	ST			Silty clay, trace fine gravel, fine to coarse sand, and shale - gray - hard to very stiff (CL)	127						
			RB										
85.0		16	ST			Sand seams in Sample 17.							
			RB										
90.0		17	ST			Silt seams in Sample 18.							
			RB										
90.0		18	ST			End of Boring Borehole grouted upon completion. Asphalt patch at ground surface. Casing used 25 ft. of 4 in. Automatic-Mobile Hammer used for Standard Penetration Tests.							
90.5													
								</					

The stratification lines represent the approximate boundary lines between soil types in-situ. the transition may be gradual.

WL 8.5 ft. WS	BORING STARTED 1/9/98	STS OFFICE Chicago Area-01
WL	BORING COMPLETED 1/9/98	ENTERED BY KKB
WL	RIG/FOREMAN Rotary/Lehtinen	SHEET NO. 3 OF 3 STS JOB NO. 24418-SS

STS Consultants Ltd

CLIENT
R.M. Chin & Associates, Inc.

LOG OF BORING NUMBER 8-2

PROJECT NAME
Grand Pier

ARCHITECT-ENGINEER
TT-CBM

SITE LOCATION
NWC E. Illinois St. & N. Columbus Dr.; Chicago, IL

○ UNCONFINED COMPRESSIVE STRENGTH
TONS/FT.²

PLASTIC LIMIT %	WATER CONTENT %	LIQUID LIMIT %
X	●	△

10 20 30 40 50

⊗ STANDARD PENETRATION BLOWS/FT.
10 20 30 40 50

DESCRIPTION OF MATERIAL

UNIT DRY WT.
LBS./FT. 3

SURFACE ELEVATION	12.0	CCD +/-
-------------------	------	---------

Driller notes 2 in. of asphalt.

Driller notes 6 in. of crushed stone base course.

Driller notes miscellaneous fill.

Fill: Silty sand and fractured bricks, trace fine to coarse gravel - dark brown to yellow brown - loose to very dense - moist (SM to GM)

Driller notes 6 in concrete slab

Fine to medium sand, trace silt and fine gravel
- brown - dense to very dense - moist to wet
(SP)

Silty clay, trace sand and shale - soft to medium (CL)

* Calibrated Penetrometer

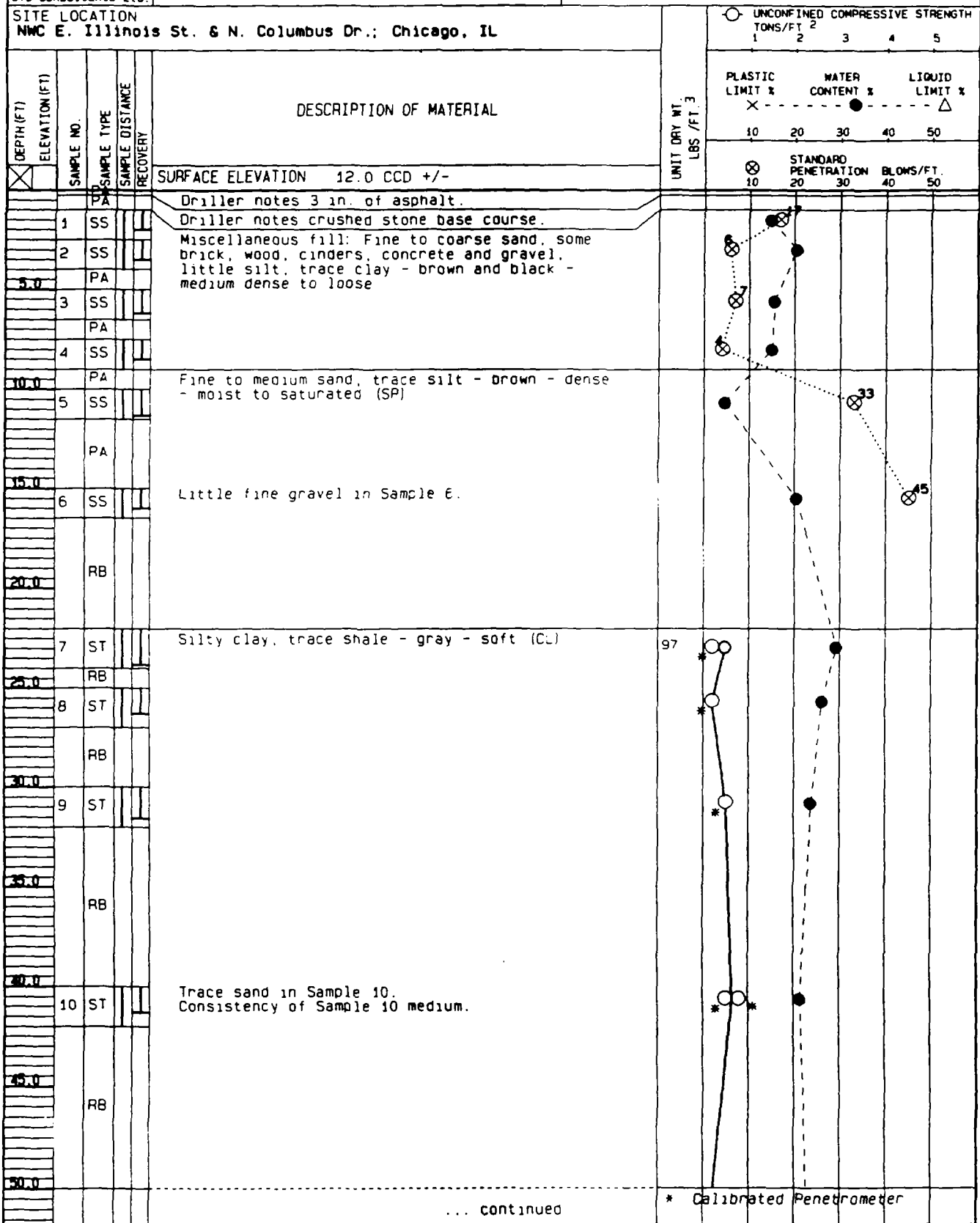
... continued



STS Consultants Ltd.

CLIENT
R.M. Chin & Associates, Inc.

LOG OF BORING NUMBER B-3

PROJECT NAME
Grand PierARCHITECT-ENGINEER
TT-CBMSITE LOCATION
NWC E. Illinois St. & N. Columbus Dr.; Chicago, IL

The stratification lines represent the approximate boundary lines between soil types; in-situ, the transition may be gradual

STS JOB NO 2441B-SS

SHEET NO 1 OF 3



STS Consultants Ltd.

CLIENT

R.M. Chin & Associates, Inc.

LOG OF BORING NUMBER B-4

PROJECT NAME

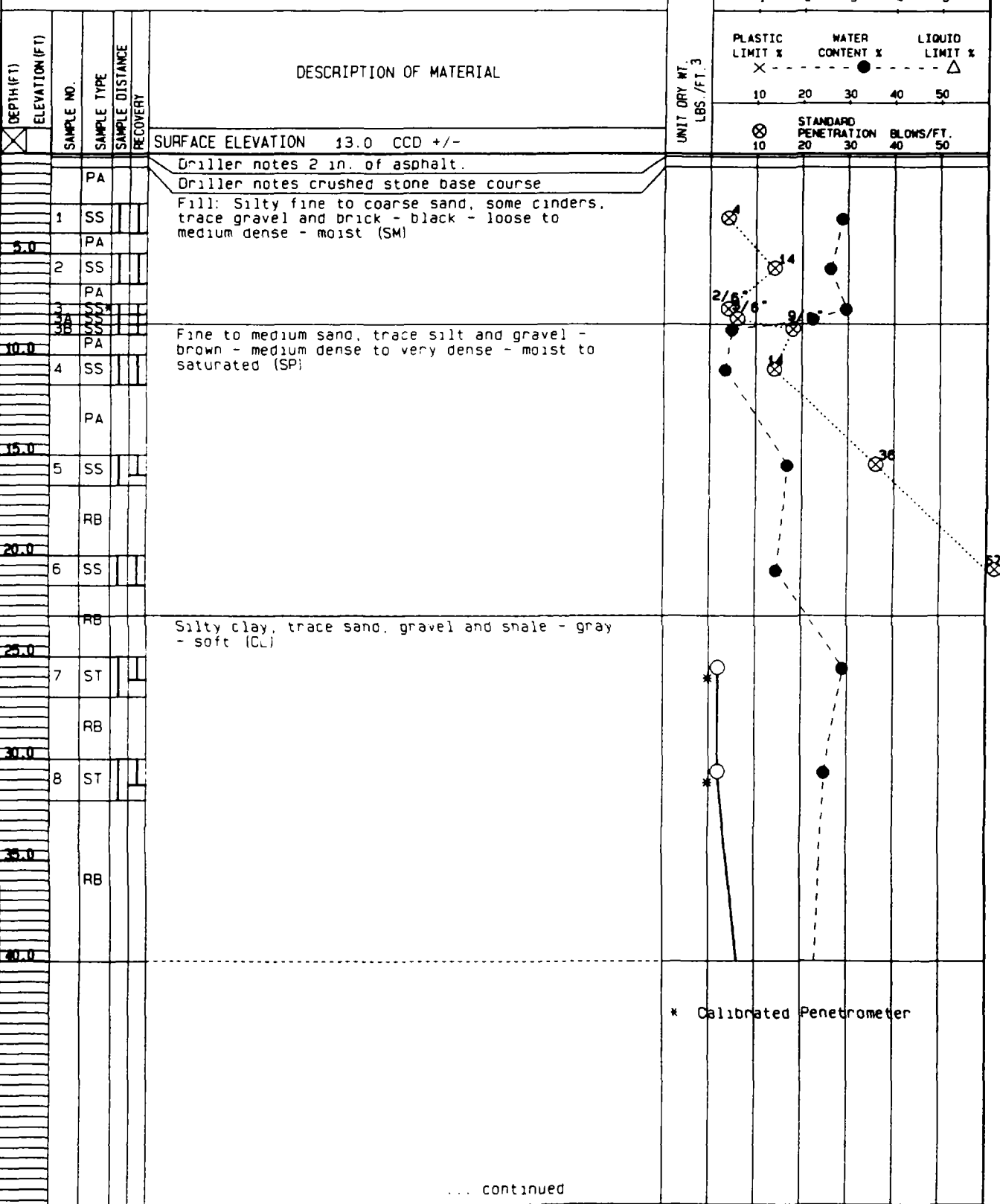
Grand Pier

ARCHITECT-ENGINEER

TT-CBM

SITE LOCATION

NWC E. Illinois St. & N. Columbus Dr.; Chicago, IL



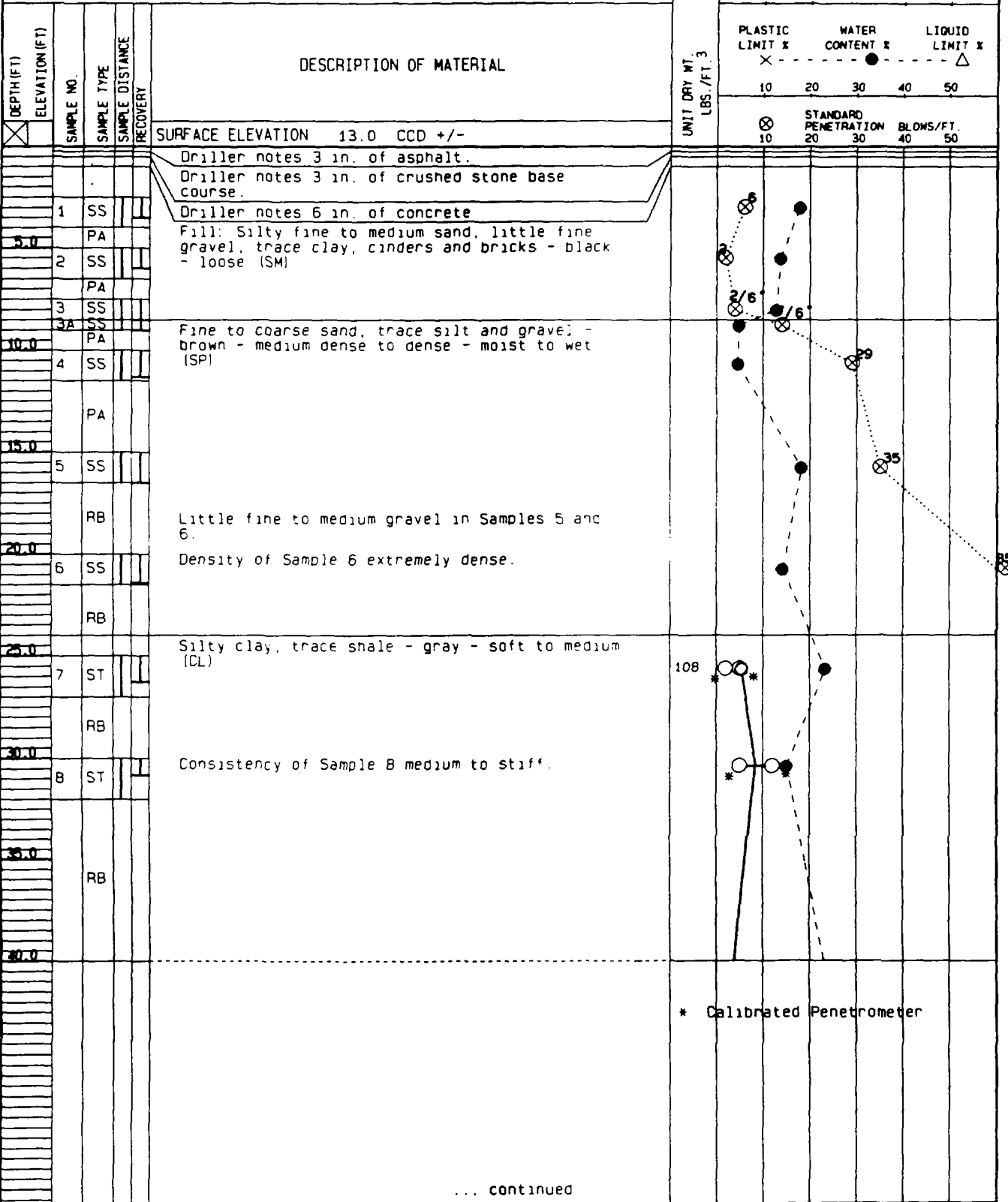
The stratification lines represent the approximate boundary lines between soil types in-situ. The transition may be gradual.

STS JOB NO. 24418-SS

SHEET NO. 1 OF 3



STS Consultants Ltd.

CLIENT
R.M. Chin & Associates, Inc.LOG OF BORING NUMBER **B-5**PROJECT NAME
Grand PierARCHITECT-ENGINEER
TT-CBMSITE LOCATION
NWC E. Illinois St. & N. Columbus Dr.: Chicago, IL

The stratification lines represent the approximate boundary lines between soil types in-situ, the transition may be gradual

STS JOB NO. 24418-SS

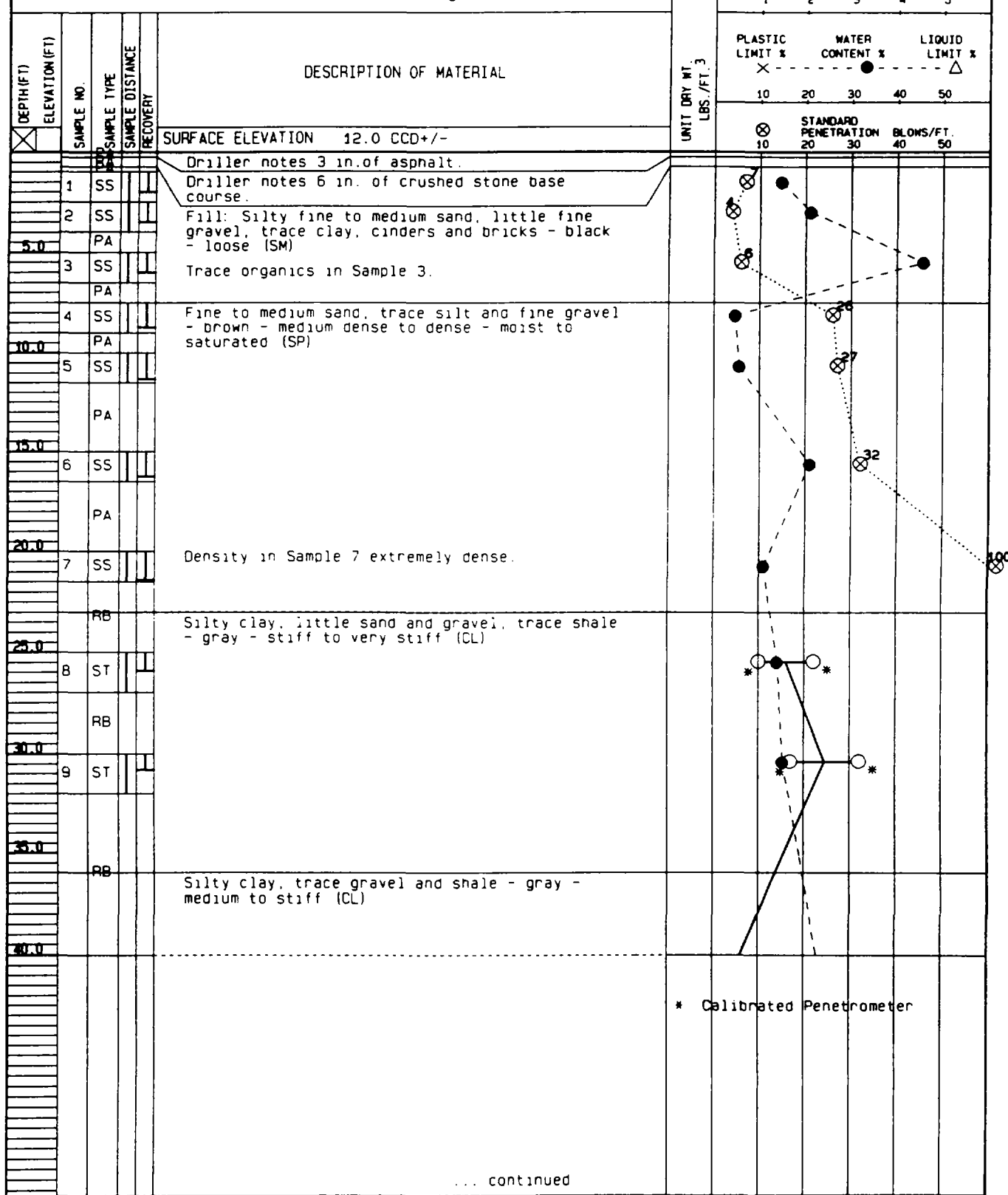
SHEET NO. 1 OF 3



STS Consultants Ltd.

CLIENT
R.M. Chin & Associates, Inc.

LOG OF BORING NUMBER B-6

PROJECT NAME
Grand PierARCHITECT-ENGINEER
TT-CBMSITE LOCATION
NWC E. Illinois St. & N. Columbus Dr.: Chicago, IL

The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual

STS JOB NO. 24418-SS

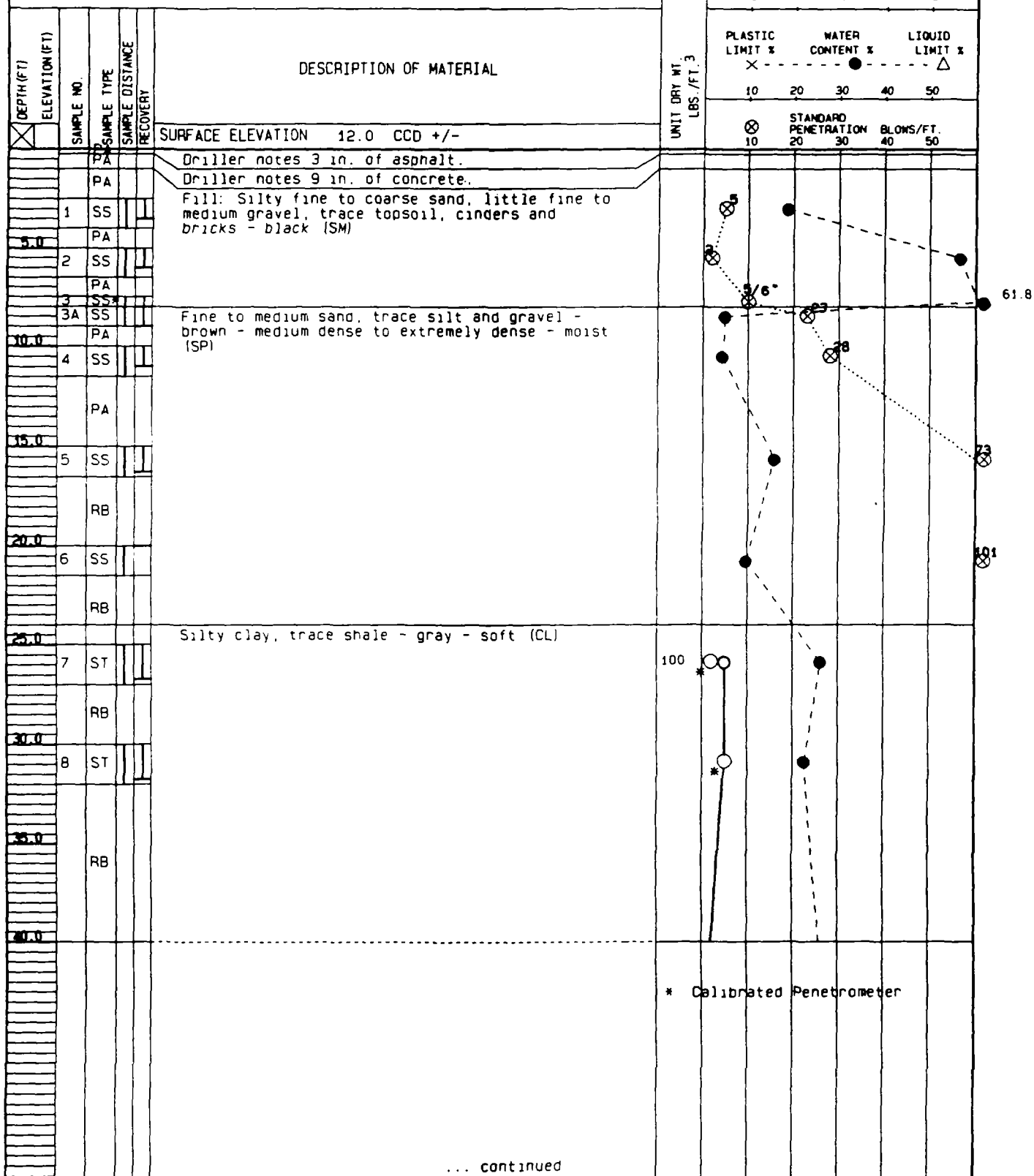
SHEET NO. 1 OF 3



STS Consultants Ltd.

CLIENT
R.M. Chin & Associates, Inc.PROJECT NAME
Grand Pier

LOG OF BORING NUMBER B-7

ARCHITECT-ENGINEER
TT-CBMSITE LOCATION
NWC E. Illinois St. & N. Columbus Dr.; Chicago, IL

... continued

The stratification lines represent the approximate boundary lines between soil types in-situ, the transition may be gradual

STS JOB NO. 24418-SS

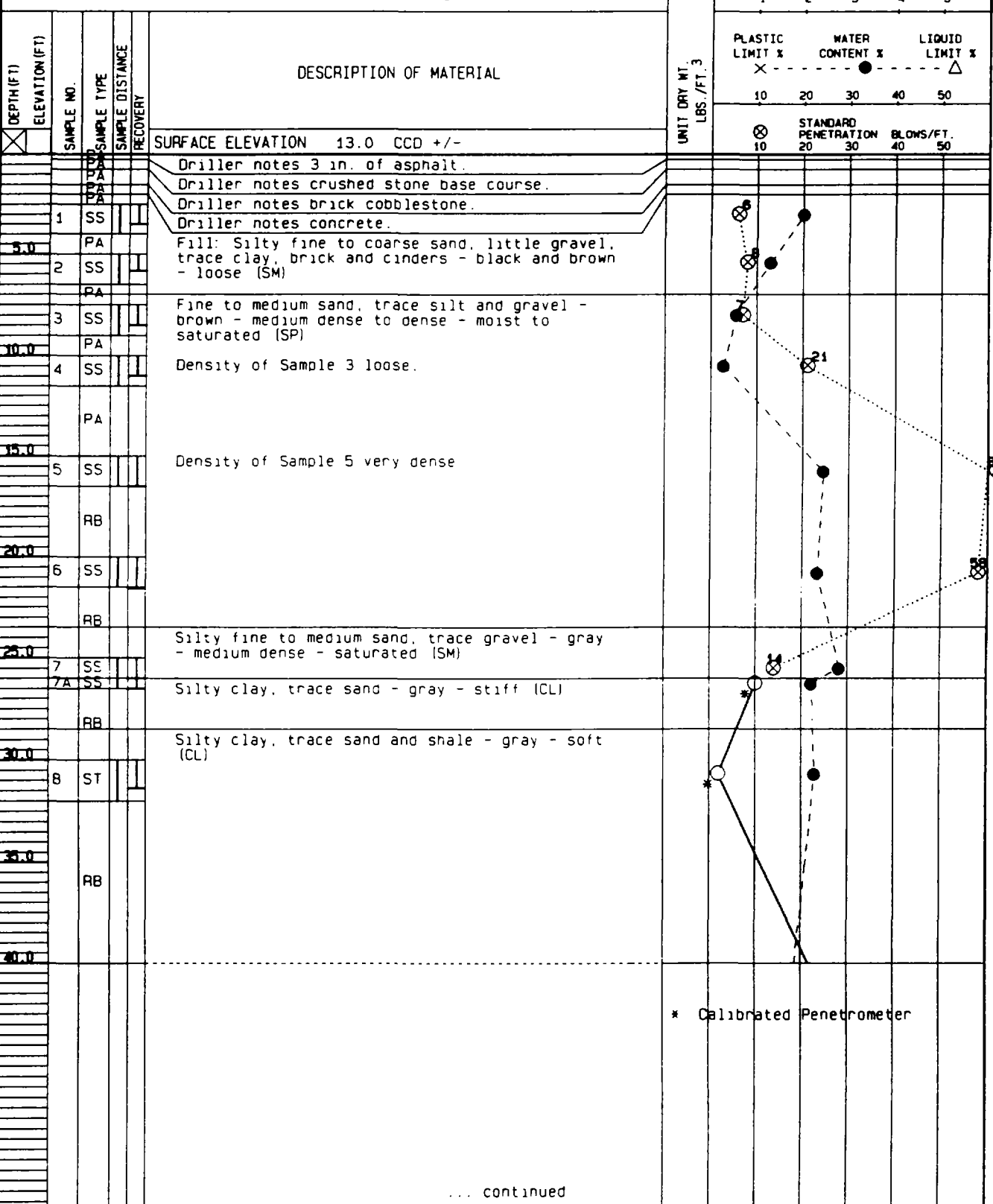
SHEET NO. 1 OF 3



STS Consultants Ltd.

CLIENT
R.M. Chin & Associates, Inc.PROJECT NAME
Grand Pier

LOG OF BORING NUMBER 8-8

ARCHITECT-ENGINEER
TT-CBMSITE LOCATION
NWC E. Illinois St. & N. Columbus Dr.: Chicago, IL

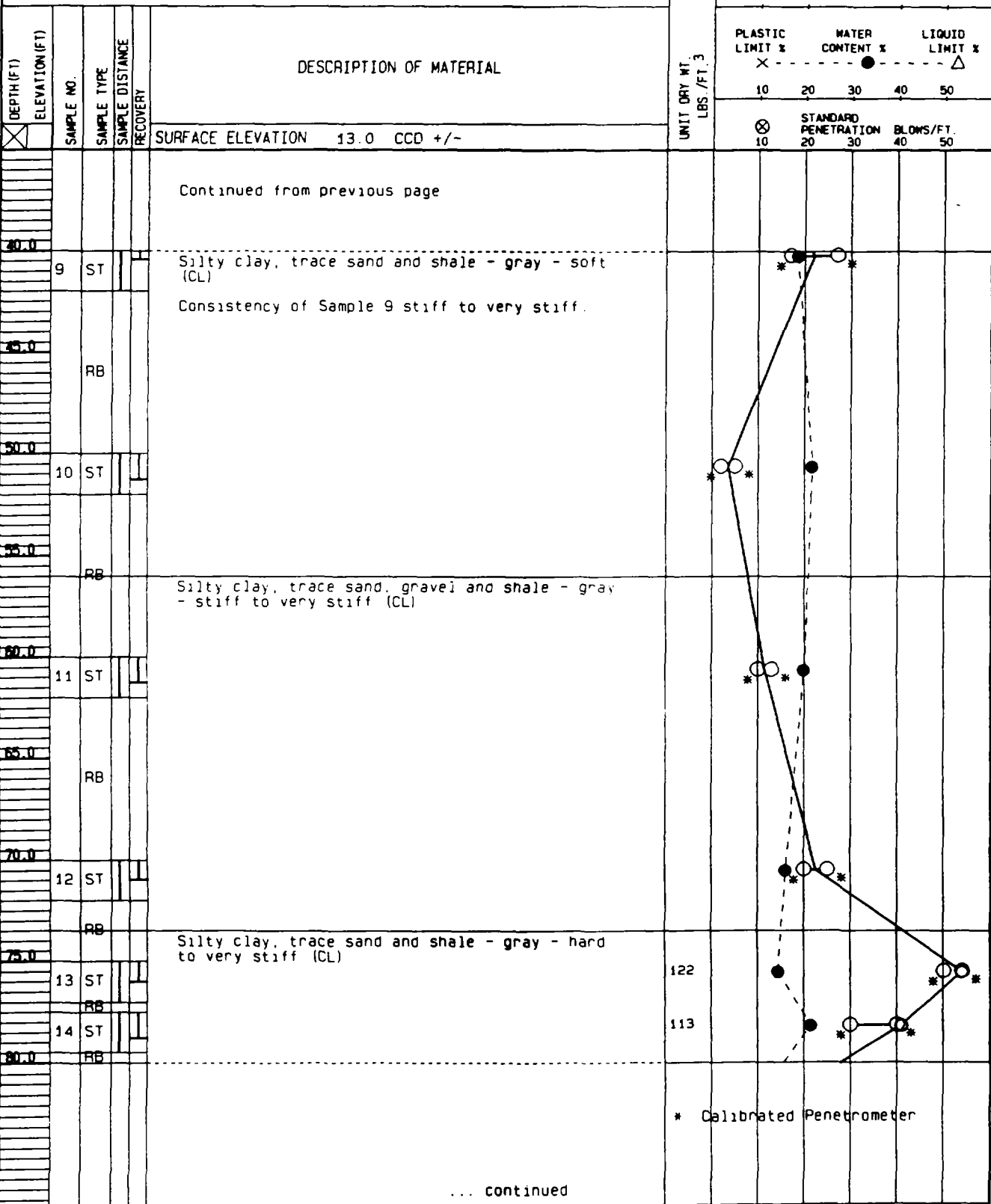
... continued



STS Consultants Ltd.

CLIENT
R.M. Chin & Associates, Inc.PROJECT NAME
Grand Pier

LOG OF BORING NUMBER 8-8

ARCHITECT-ENGINEER
TT-CBMSITE LOCATION
NWC E. Illinois St. & N. Columbus Dr.; Chicago, IL

The stratification lines represent the approximate boundary lines between soil types in-situ, the transition may be gradual.

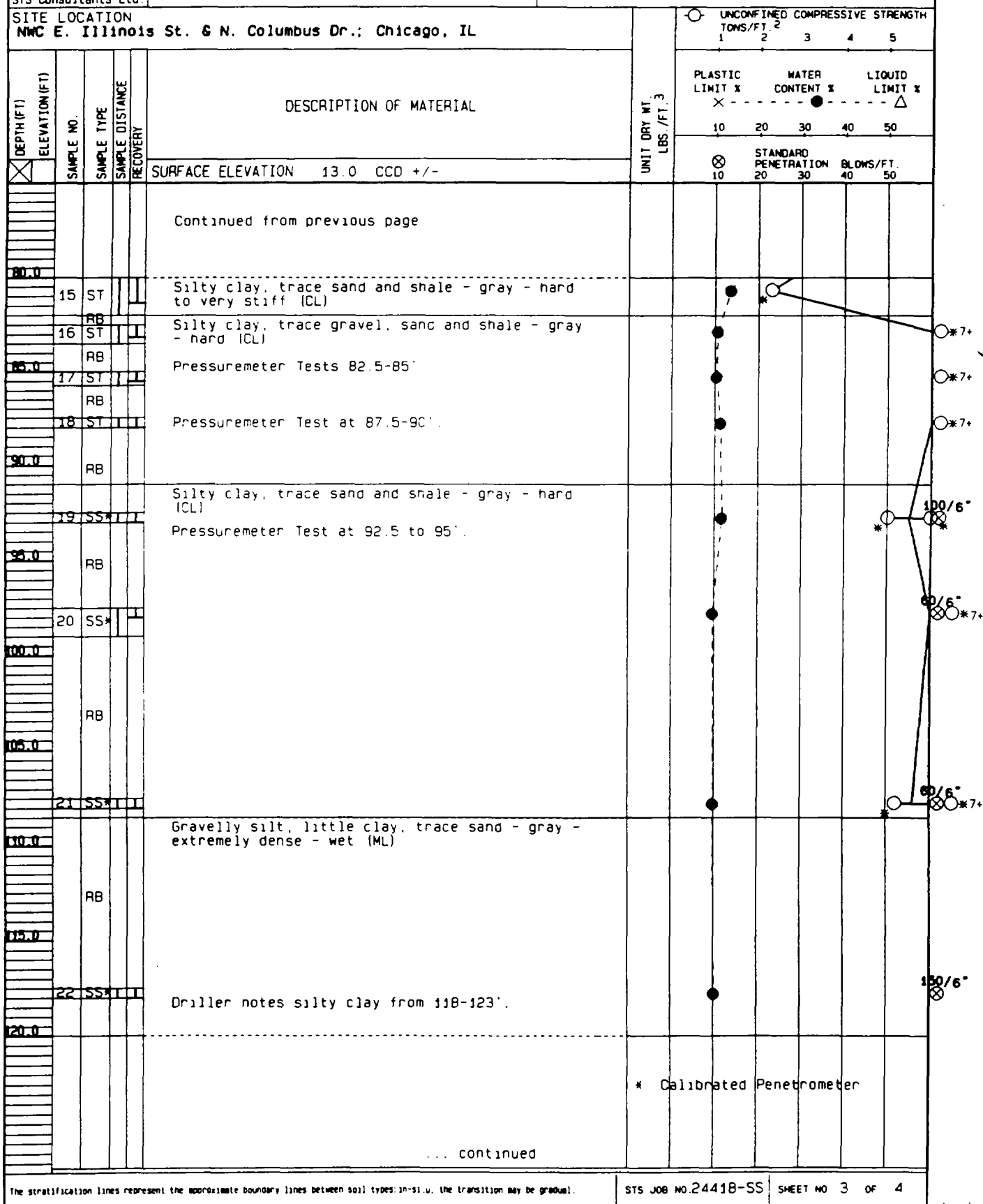
STS JOB NO. 24418-SS SHEET NO. 2 OF 4



STS Consultants Ltd.

CLIENT
R.M. Chin & Associates, Inc.

LOG OF BORING NUMBER B-8

PROJECT NAME
Grand PierARCHITECT-ENGINEER
TT-CBMSITE LOCATION
NWC E. Illinois St. & N. Columbus Dr.; Chicago, IL

The stratification lines represent the approximate boundary lines between soil types; in-situ, the transition may be gradual.

STS JOB NO. 2441B-SS

SHEET NO. 3 OF 4



STS Consultants Ltd.

CLIENT
R.M. Chin & Associates, Inc.

LOG OF BORING NUMBER B-B

PROJECT NAME
Grand PierARCHITECT-ENGINEER
TT-CBMSITE LOCATION
NWC E. Illinois St. & N. Columbus Dr.; Chicago, IL

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT. 3	UNCONFINED COMPRESSIVE STRENGTH TONS/FT. 2					PLASTIC LIMIT %					WATER CONTENT %					LIQUID LIMIT %				
								1	2	3	4	5	10	20	30	40	50	10	20	30	40	50	10	20	30	40	50
13.0						SURFACE ELEVATION 13.0 CCD +/-																					
120.0						Continued from previous page																					
125.0			RB			Gravelly silt, little clay, trace sand - gray - extremely dense - wet (ML) Driller notes silty clay from 118-123'.																					
127.5						Driller notes limestone bedrock from 125.5-127.5'																					
						End of Boring Borehole grouted upon completion. Asphalt patch at ground surface. Casing used: 30 ft. of 4 in. Automatic-Mobile Hammer used for Standard Penetration Tests. SS* = Standard penetration value based on first 6 inches of driving																					

The stratification lines represent the approximate boundary lines between soil types in-situ, the transition may be gradual.

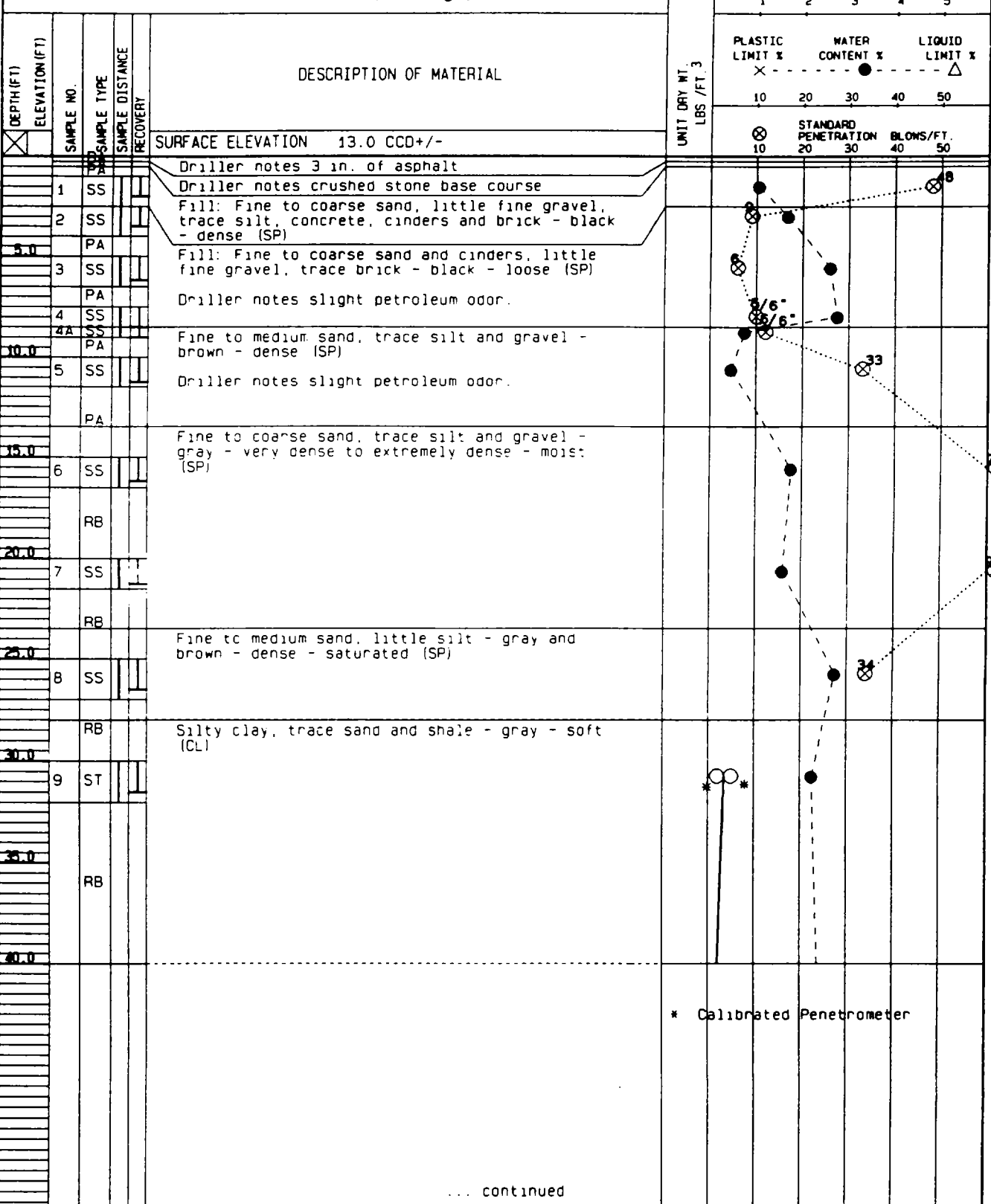
WL 13.5 ft. WD	BORING STARTED 1/19/98	STS OFFICE Chicago Area-01
WL 15 ft. BCR: 13 ft. ACR	BORING COMPLETED 1/20/98	ENTERED BY KKB
WL	RIG/FOREMAN Rotary/Baker	SHEET NO. 4 OF 4 APP'D BY DR STS JOB NO. 24418-SS



STS Consultants Ltd

CLIENT
R.M. Chin & Associates, Inc.PROJECT NAME
Grand Pier

LOG OF BORING NUMBER B-9

ARCHITECT-ENGINEER
TT-CBMSITE LOCATION
NWC E. Illinois St. & N. Columbus Dr.; Chicago, IL

... continued

STS Consultants Ltd.

CLIENT
R.M. Chin & Associates, Inc.

LOG OF BORING NUMBER **B-11**

PROJECT NAME
Grand Pier

ARCHITECT-ENGINEER
TT-CBM

SITE LOCATION
NWC E. Illinois St. & N. Columbus Dr.; Chicago, IL

UNCONFINED COMPRESSIVE STRENGTH TONS/FT. ²					
1	2	3	4	5	

PLASTIC LIMIT % WATER CONTENT % LIQUID LIMIT %
X ----- ● ----- Δ
10 20 30 40 50

	STANDARD PENETRATION		BLOWS/FT.	
	20	30	40	50
10				

DEPTH (FT)
ELEVATION (FT)

ELEVATION

SAMPLE NO.

SAMPLE TYPE

SAMPLE D1
OF COVER

DESCRIPTION OF MATERIAL

UNIT DAY WT.
LBS./FT 3

SURFACE ELEVATION 12.0 CCD

Blank drill through urban fill and sand strata.

30

303

150

200

23.0

300

35.0

40.0

AB

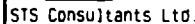
Blank drill through gray silty clay

... continued

The stratification lines represent the approximate boundary lines between soil types in-situ. The transition may be gradual.

STS JOB NO. 24418-SS

SHEET NO 1 OF 3



PROJECT NAME
Grand Pier Center

ARCHITECT-ENGINEER
TT-CBM

NWC E. Illinois St. & N. Columbus Dr.; Chicago, IL

The stratification lines represent the approximate boundary lines between soil types; in-situ, the transition may be gradual.

STS JOB NO. 24418-SS | SHEET NO 1 OF 3



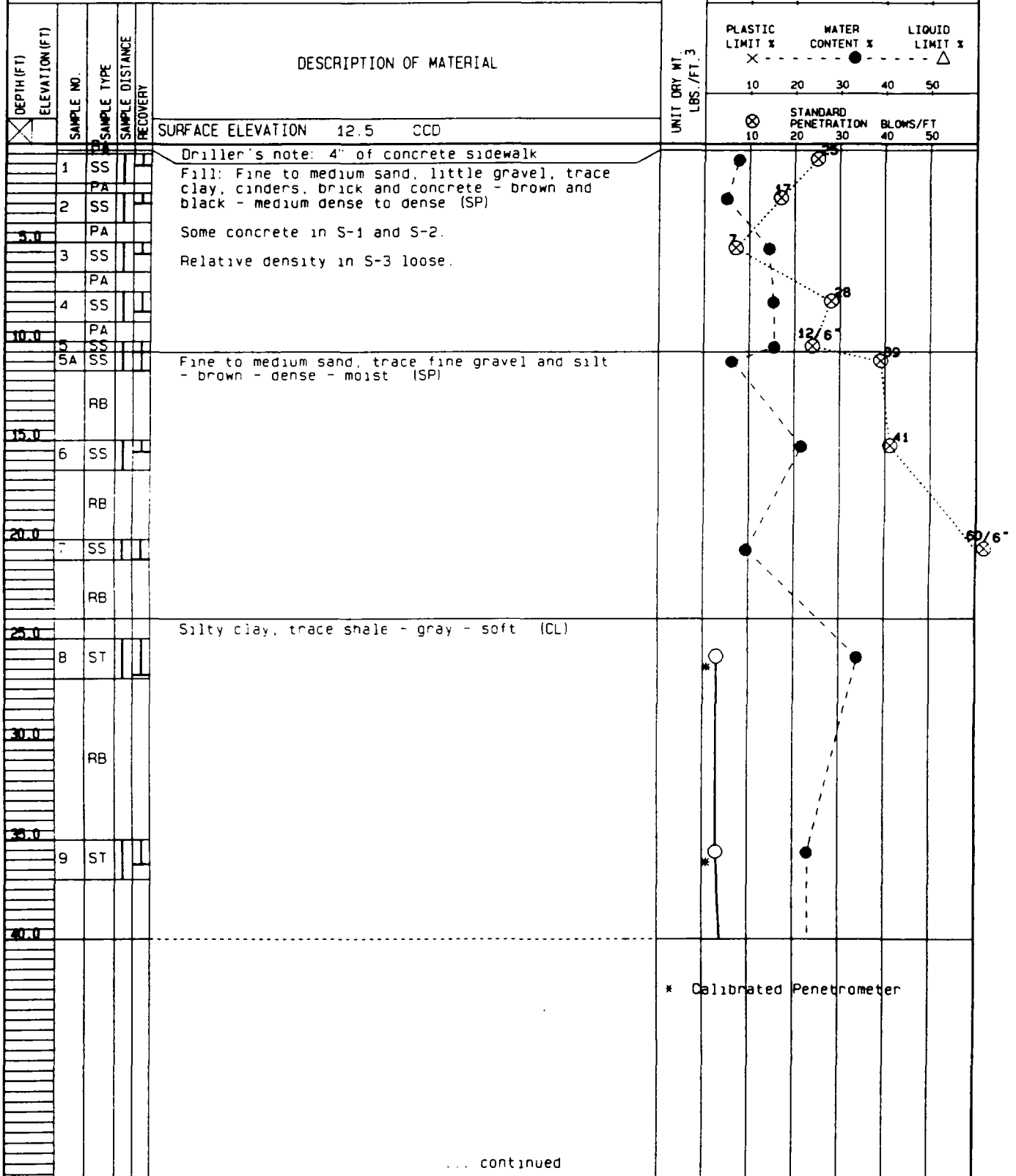
STS Consultants Ltd

CLIENT
R.M. Chin & Associates, Inc.
PROJECT NAME
Grand Pier Center

LOG OF BORING NUMBER B-101

ARCHITECT-ENGINEER
TT-CBM

SITE LOCATION
NWC E. Illinois St. & N. Columbus Dr., Chicago, IL



... continued

ATTACHMENT 3
HIGHWAY AUTHORITY AGREEMENT

No P.I.N. applicable
Document affects public way.

99924673

RIGHT-OF-WAY AGREEMENT

This Right-of-Way Agreement ("Agreement") is entered into this 27th day of Sept., 1999 by and among River East, L.L.C. ("River East") and Kerr-McGee Chemical L.L.C. ("Kerr-McGee"), together referred to herein as the Obligors ("Obligors"), and the City of Chicago ("City"), as follows:

1. This Agreement is not binding on the City until it is executed by a duly authorized representative of the City. Prior to execution, this Agreement constitutes an offer by the Obligors. The duly authorized representatives of the Obligors have signed this Agreement, and this Agreement is binding upon them and their successors by merger or reorganization, upon execution by the City.
2. The Obligors stipulate:
 - a. The Site is located at 316 E. Illinois Street, Chicago, Illinois ("the Site"). The Site is and has been for multiple decades, used as an asphalt-paved parking lot. The Site is bounded by Grand Avenue, McClurg Court, Illinois Street and Columbus Drive.
 - b. On June 3, 1993, the United States Environmental Protection Agency ("USEPA") and the Illinois Department of Nuclear Safety ("IDNS") conducted a joint investigation at the Site and verified the presence of radioactivity below the asphalt surface of the Site at levels above natural background. USEPA determined that the use of the Site as a parking lot posed a negligible risk to the public.
 - c. A historical search determined that in the 1920s and 1930s a company known as the Lindsay Light Company leased the Site for the processing of thorium ores. Lindsay Light is a predecessor of Kerr-McGee. An ingredient in gas mantel manufacturing is thorium extracted from sand and formed into a solution into which mantels were dipped during the manufacturing process. It is believed that Section 11(e) (2) material, 42 U.S.C. §2014(e)(2) from this processing process is found at and around the Site ("Thorium Residuals").
 - d. On January 27, 1994, the Chicago Dock & Canal Trust ("Chicago Dock") (a predecessor to River East), entered into an Administrative Order by Consent ("AOC") with USEPA to investigate and study the extent of Thorium Residuals at

the Site. The study was completed in May, 1994. A final report concerning the extent of contamination was delivered to USEPA on October 17, 1995, and the study was approved by USEPA on March 13, 1996. The final report concluded, inter alia, that there were twelve subsurface areas at the Site which exhibited elevated gamma radiation levels. The AOC is Attachment B.

- e. On June 6, 1996, the USEPA issued a Unilateral Administrative Order ("UAO") to Chicago Dock and Kerr-McGee directing that a removal action be conducted at the Site pursuant to Section 106(a) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. §9606(a). The UAO established criteria (the "Cleanup Criteria") for Thorium Residuals of 7.1 picoCuries per gram total radium – 5 picoCuries per gram total radium above background. The UAO is attached as Attachment C.
 - f. Pursuant to the UAO and with approval of USEPA, Chicago Dock and Kerr-McGee conducted and completed a removal action at the Site. This remediation took several months during CY1996 and 1997 and involved the removal and disposal of soils from the Site.
 - g. During the removal action, testing along Illinois Street and Columbus Drive revealed deposits of Thorium Residuals which could not be readily excavated. Information regarding the known location of this contamination was provided to the City during a meeting on June 26, 1997, and in subsequent correspondence dated July 14, 1997. Attachment D depicts the portions of Grand Avenue, Illinois Street, McClurg Court and Columbus Drive rights-of-way adjacent to the Site that are the subject of this Agreement ("designated rights-of-way"). The impacted areas of the designated rights-of-way adjacent to the Site where Thorium Residuals are known to be located ("impacted rights-of-way") are described on Attachment E. If subsequent sampling and analysis indicates the presence of contaminants associated with Thorium Residuals beneath the designated rights-of-way, then those areas shall be subject to and covered by this Agreement.
 - h. Attached as Attachment E is a site map showing the known areas of Thorium Residuals in the impacted rights-of-way, and the relative concentration of the Thorium Residuals governed by the UAO.
- 3. The City stipulates that it holds the designated rights-of-way adjacent to the Site in trust for the public and has jurisdiction over the designated rights-of-way.
 - 4. The parties stipulate that:
 - a. This Agreement is intended to meet the requirements of the United States Environmental Protection Agency regarding Thorium Residuals.
 - b. This Agreement shall run with the land constituting the designated rights-of-way and shall be recorded by the Obligor at their expense with the Cook County

Recorder of Deeds on the property described in Attachment D (the designated rights-of-way). Within thirty (30) days of such recording with the Cook County Recorder of Deeds, the Obligors shall provide the City a copy of the Agreement that has been stamped by the Cook County Recorder of Deeds to indicate that it has been recorded with that office. No filing or notice will be referenced against the Site.

- c. This Agreement shall be null and void should the United States Environmental Protection Agency not approve it.
5. The City agrees that it will limit access to soil as described herein under portions of the impacted rights-of way described in Attachment E and in any supplemental exhibits as provided in ¶2(g) that exceed USEPA Cleanup Criteria, as provided in Code Section 10-20-100, et.seq. subject to the following conditions:
- a. Where the pavement and sidewalk in the impacted rights-of-way are to be considered engineered barriers to gamma radiation emanating from Thorium Residuals, the Obligors agree to reimburse the City for maintenance activities requested by the Obligors. The City does not agree to maintain the designated rights-of-way, nor does it guarantee that the designated rights-of-way will continue as a roadway or sidewalk, or that the impacted rights-of-way will always be maintained as an engineered barrier.
 - b. This Agreement does not in any way limit the City's authority to construct, reconstruct, repair or maintain and operate the designated rights-of-way upon the property or other portions of the designated rights-of-way subsequently identified as containing contaminants associated with Thorium Residuals, or to allow others to use the designated rights-of-way. To that extent, the City reserves the right to identify, investigate, and remove soil contaminated with Thorium Residuals above the Cleanup Criteria from the impacted rights-of-way or from other portions of the designated rights-of-way adjacent to the Site subsequently identified as containing contaminants associated with Thorium Residuals and to dispose of them in accordance with applicable environmental regulations so as to avoid causing a further release of the contaminants and to protect human health and the environment. The Obligors shall reimburse the reasonable actual costs incurred by the City or its contractors or agents in so identifying, investigating, removing, storing, handling or disposing of soil contaminated with Thorium Residuals above the Cleanup Criteria, and it shall not be a defense for the Obligors that those costs were not consistent with or required by United States Environmental Protection Agency regulations, guidelines or policies. Prior to incurring any such costs, the City shall first give the Obligors thirty days notice, unless there is an urgent reason otherwise, to remove or dispose of soil contaminated with Thorium Residuals above the Cleanup Criteria to the extent necessary for the City's work. The City will cooperate with the Obligors in the conduct of the work including providing reasonable and appropriate access. USEPA shall also be forwarded a copy of this notice. Failure to give this

opportunity to the Obligors shall not be a defense to a claim for reimbursement or that the work should not have been done. If no such notice and opportunity are provided by the City to the Obligors and there was no urgent reason otherwise, the City's claim for reimbursement against the Obligors for such costs shall not exceed \$10,000.00. For the purpose of this Agreement only, there is a rebuttable presumption that Thorium Residuals found in the portions of the impacted rights-of-way or in other portions of the designated rights-of-way subsequently identified as containing contaminants associated with Thorium Residuals arose from the release of Thorium Residuals from the Site. Should the Obligors not reimburse the costs identified here, this Agreement shall be null and void in addition to such other remedies as may be available to the City.

6. The Obligors agree to indemnify and hold harmless the City, its agents and employees, and contractors, for all obligations asserted against or costs incurred by them associated with the release of contaminants associated with Thorium Residuals in the impacted rights-of-way or in other portions of the designated rights-of-way subsequently identified as containing Thorium Residuals.
7. Violation of the terms of this Agreement by the Obligors, or their successor(s) in interest, may be grounds for voidance of this Agreement.
8. No violation of a permit by a third party shall constitute a breach of this Agreement by the City. The Obligors also agree that their personnel, if any, at the Site will exercise due diligence in notifying those accessing contaminated soil in the impacted rights-of-way of their rights and responsibilities under this Agreement.
9. Should the City breach this Agreement, the Obligors' sole remedy is for an action for damages in the Circuit Court of Cook County. Any and all claims for damages against the City, its agents, contractors, employees or its successors in interest arising at any time are limited to an aggregate maximum of \$20,000.00. No other breach by the City, its agents, contractors, employees or its successors in interest of a provision of this Agreement is actionable in either law or equity by the Obligors against the City or them and the Obligors hereby release the City, its agents, contractors, employees and its successors in interest for any cause of action it may have against them, other than as allowed in this paragraph, arising under this Agreement or environmental laws, regulations or common law governing contaminated soil in the designated rights-of-way. Should the City convey, vacate or transfer jurisdiction of the designated rights-of-way, the Obligors may pursue an action under this Agreement, not limited in amount, against the successors in interest, other than the City, or any of its departments, or State agency, in a Court of Law.
10. The City will limit access to the rights-of-way as follows:
 - a. Normal Access: The City will limit access to designated rights-of-way via the City Department of Transportation ("CDOT"), or its successor entity. Pursuant to §§10-20-100 and 10-20-150 of the Municipal Code of Chicago, a permit must be

issued by CDOT to any party, including the City, requesting to perform subsurface work in a City right-of-way. CDOT maintains and will maintain a permit database which, in conjunction with the City Department of Environment ("DOE"), tracks City rights-of-way with reported subsurface contamination. CDOT will consult the database whenever a party requests such a permit. The CDOT permit database will indicate the reported contamination under the impacted rights-of-way and it will indicate that radiation surveillance must be performed before and during excavations performed on other impacted rights-of-way subsequently identified as containing contaminants associated with Thorium Residuals through sampling and analysis. The permit database will also indicate that radiation surveillance must be performed during excavation or other work that disturbs or exposes the soil beneath the designated right-of-way. The CDOT database will direct the permit applicant to DOE to obtain detailed information on the nature and extent of the contamination and of the radiation surveillance requirements for any excavation near other impacted rights-of-way subsequently identified as containing contaminants associated with Thorium Residuals. After the permit applicant consults with DOE, the applicant must complete a form where the applicant acknowledges that it is aware of the contamination, will take appropriate steps to ensure the health and safety of people working in the impacted rights-of-way, and agrees to follow the health and safety plan for Thorium Residuals for these rights-of-way ("Health and Safety Plan"), attached as Attachment F, or other plan reviewed by USEPA that provides equal or greater health and safety protections, and to dispose of Thorium Residuals as required by law. DOE will provide written notice to River East, Kerr-McGee and USEPA at the time permit applicants contact DOE about the designated rights-of-ways and the radiation surveillance requirements.

- b. Emergency Access: The City Board of Underground ("BOU"), the City Department of Buildings, and the Chicago Fire Department, or their successor entities, will be notified of the contamination at the impacted rights-of-way and will be forwarded copies of all available environmental data regarding the impacted rights-of-way, including the Health and Safety Plan. BOU will provide this information to all utilities in the area. In the event of an emergency that occurs outside of CDOT business hours, this will enable utilities to provide their personnel with the appropriate information to ensure that proper health and safety precautions are taken.

- 11. The City will place and maintain placards in any underground access in the rights-of-way that state "Before Work, Contact Chicago Department of Transportation."

12. Notice for purposes of this Agreement should go to the following:

City of Chicago:
Commissioner
Department of Environment
30 N. LaSalle Street
25th Floor
Chicago, IL 60602
312/744-7606

River East LLC
contact Kevin Augustyn
Randy Grueb
Charles Langenfeld

455 East Illinois
Suite 565
Chicago, IL 60611
Telephone: 312/321-8900
Facsimile: 312/755-2750

and:

Vincent S. Oleszkiewicz
counsel for River East LLC/MCL Companies
Baker & McKenzie
130 East Randolph Drive
Chicago, IL 60601
Telephone: 312/861-3737
Facsimile: 312/861-2899

Kerr-McGee
contact: Dan White
Kerr-McGee Center
Oklahoma City, OK 73125
Telephone: 405/270-3792
Facsimile: 405/270-3787

and:

Richard Meserve
counsel for Kerr-McGee
Covington & Burling
1201 Pennsylvania Ave., N.W.

Washington, D.C. 20044
Telephone: 202/662-5304
Facsimile: 202/662-6291

U.S. EPA Region 5
Lindsay Light II Site, Office of Regional Counsel
contact: Mary Fulghum
77 West Jackson Boulevard
Chicago, IL 60604-3590
Telephone: 312/886-4683
Facsimile: 312/886-0747

13. Obligors, and any of their successor(s) by merger or reorganization pursuant to paragraph 1 of this Agreement, shall, at least 15 days prior to such subsequent merger or reorganization, give written notice and a copy of this Agreement to subsequent successor entity(ies), and provide written notice thereof to the City. The notice to the City shall include the name and address of the successor entity(ies).
14. If any provision of this Agreement is determined to exceed the authority of the City, or if any provision of this Agreement is declared null and void or unenforceable by any court or tribunal having jurisdiction, then this Agreement shall be null and void. If this Agreement is declared null and void, the information about the contamination will remain in the CDOT database and all permit applicants will be required to consult with DOE as described above. Similarly, the Emergency Access procedures described above will remain in force if the Agreement is declared null and void.
15. This Agreement shall continue in effect from the date of the Agreement until the Thorium Residuals in the soil are subsequently reduced through active remediation to levels approved by USEPA, such that unrestricted access to the impacted rights-of-way or other portions of the designated rights-of-way subsequently identified as containing contaminants associated with Thorium Residuals is demonstrated to be appropriate and there is no longer a need for this Agreement, and USEPA has, upon written request to the USEPA and notice to the City, provided a written determination authorizing unencumbered access to the impacted rights-of way.
16. Nothing in this Agreement shall be deemed to create any right or obligation in any person not a party hereto and this Agreement shall not be construed in any respect to be a contract in whole or in part for the benefit of any third party nor an admission of any fact, condition or obligation by or for the benefit of any third party, nor shall any statement herein be considered an admission of fact for any purpose or use outside this Agreement. Nothing in this Agreement shall preclude the City, Kerr-McGee or River East from petitioning U.S. EPA for a relaxation of the Cleanup Criteria, if circumstances so warrant.

IN WITNESS WHEREOF, the City of Chicago caused this Agreement to be signed by its duly authorized representative:

BY: _____
Commissioner
Department of Environment
City of Chicago

Date: _____

IN WITNESS WHEREOF, River East, L.L.C. has caused this Agreement to be signed by its duly authorized representative:

River East, L.L.C.
By: River East, L.L.C.
Its: Sole Member
By: River East, L.L.C.
Its: Manager

By: _____
Its: _____

IN WITNESS WHEREOF, Kerr McGee Chemical L.L.C. has caused this Agreement to be signed by its duly authorized representative:

BY: George D. Christiansen
George D. Christiansen
Vice President

Date: 09/24/99


IN WITNESS WHEREOF, the City of Chicago caused this Agreement to be signed by its duly authorized representative:

BY: _____
Commissioner
Department of Environment
City of Chicago

Date: _____

IN WITNESS WHEREOF, River East, L.L.C. has caused this Agreement to be signed by its duly authorized representative:

River East, L.L.C.
By: River East, L.L.C. ~~Inc.~~
Its: ~~Sole Member~~
~~By: River East, L.L.C.~~
Its: Manager

By: 
Its: Manager


9/27/99

IN WITNESS WHEREOF, Kerr McGee Chemical L.L.C. has caused this Agreement to be signed by its duly authorized representative:

BY: _____

Date: _____

IN WITNESS WHEREOF, the City of Chicago caused this Agreement to be signed by its duly authorized representative:

BY: 
Commissioner
Department of Environment
City of Chicago

Date: 9/24/99

IN WITNESS WHEREOF, River East, L.L.C. has caused this Agreement to be signed by its duly authorized representative:

River East, L.L.C.
By: River East, L.L.C.
Its: Sole Member
By: River East, L.L.C.
Its: Manager

By: _____
Its: _____

IN WITNESS WHEREOF, Kerr McGee Chemical L.L.C. has caused this Agreement to be signed by its duly authorized representative:

BY: _____

Date: _____

ATTACHMENTS

- A- [Intentionally Omitted]
- B- AOC
- C- UAO
- D- Designated rights-of-way
- E- Impacted rights-of-way
- F- Health & Safety Plan

ATTACHMENT A

[Intentionally Omitted]

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

V-W- '94-C-223

IN THE MATTER OF:	)	Docket No.
)	
Lindsay Light II Site	)	ADMINISTRATIVE ORDER BY
316 East Illinois Street	)	CONSENT PURSUANT TO
Chicago, Illinois	)	SECTION 106 OF THE
	)	COMPREHENSIVE
	)	ENVIRONMENTAL RESPONSE,
Respondent:	)	COMPENSATION AND
	)	LIABILITY ACT OF 1980,
The Chicago Dock & Canal Trust	)	as amended, 42 U.S.C.
	)	Section 9606(a)

PREAMBLE

The United States Environmental Protection Agency (U.S. EPA) and the Respondent have each agreed to the making and entry of this Order by Consent.

It is issued pursuant to the authority vested in the President of the United States by Sections 106(a) and 122 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. Section 9606(a), as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. 99-499 (CERCLA), and delegated to the Administrator of the U.S. EPA by Executive Order No. 12580, January 23, 1987, 52 Federal Register 2923, and further delegated to the Assistant Administrator for Solid Waste and Emergency Response and the Regional Administrators by U.S. EPA Delegation Nos. 14-14, 14-14-C and 14-14-D, and to the Director, Waste Management Division, Region V, by Regional Delegation Nos. 14-14-A, 14-14-C and 14-14-D.

A copy of this Order will also be provided to the State of Illinois, which has been notified of the issuance of this Order as required by Section 106(a) of CERCLA, 42 U.S.C. Section 9606(a).

This Order requires the Respondent to undertake and complete emergency investigation and sampling activities to abate conditions which may present an imminent and substantial endangerment to the public health or welfare or the environment because of an actual or threatened release of hazardous substances at the Site.

FINDINGS

Based on available information, including the Administrative Record in this matter, U.S. EPA hereby finds:

1. The Lindsay Light II Site ("the Site" or "the Facility") is located at 316 East Illinois Street, Chicago, Cook County, Illinois. The Site is situated in a urban area called the Gold Coast, and is surrounded by commercial and residential buildings. A shopping mall is located approximately 200 feet to the southeast. The Chicago River is located 1 mile south of the Site and Lake Michigan is about 1.5 miles east of the Site.
2. The Site is currently a parking lot operated by General Parking and owned by The Chicago Dock and Canal Trust.
3. Until 1936, Lindsay Light manufactured incandescent gas mantels at 161 East Grand, which is .25 miles from the Site. It is unknown if they worked elsewhere; however, Sanborn maps from 1906 do show Lindsay Light being at other Chicago locations. During 1931-1936, the company moved its operations to West Chicago, Illinois.
4. The principle ingredient in gas mantle manufacture is thorium as a nitrate. Small amounts of cerium, beryllium and magnesium nitrates are also used. Thorium occurs principally as the parent radionuclide thorium-232 in association with its daughter products in a decay sequence known as the Thorium Decay Series. Thorium radionuclides are also found in the Uranium Decay Series and the Actinium Decay Series. It is believed that the principal source of contamination at this Site is the Thorium Decay Series.
5. It is unclear what Lindsay Light actually did at 316 East Illinois; however, records from The Chicago Dock and Canal Trust indicate this Site was a stable, and that Lindsay Light leased portions of the building from The Chicago Dock and Canal Trust from 1915-1933.
6. On June 3, 1993, U.S. EPA and the Illinois Department of Nuclear Safety conducted a joint investigation at the Site. This investigation verified the presence of radioactivity at levels clearly above natural background. Gamma readings were found as high as 280 uR/hr on a Ludlum Model 19 Micro-R meter. Background measured at the Site had gamma readings of 20 uR/hr.

DETERMINATIONS

Based on the foregoing Findings, U.S. EPA has determined that:

1. The Lindsay Light II Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. Section 9601(9).

2. The Chicago Dock & Canal Trust is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. Section 9601(21).
4. Radionuclides are "hazardous substances" as defined by Section 101(14) of CERCLA, 42 U.S.C. Section 9601(14).
5. The detection of gamma rays as high as 280 uR/hr constitutes an actual or threatened "release" as that term is defined in Section 101(22) of CERCLA, 42 U.S.C. Section 9601(22).
6. The actual or threatened release of hazardous substances from the Facility may present an imminent and substantial endangerment to the public health, welfare, or the environment.
7. The actions required by this Order, if properly performed, are consistent with the National Contingency Plan (NCP), 40 CFR Part 300, as amended, and CERCLA; and are reasonable and necessary to protect the public health, welfare and the environment because of the following factors:

- a. actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants or contaminants;

This factor is present at the Facility due to the existence of a public parking lot on property found to have gamma readings measured as high as 280 microroentgen per hour (uR/hr) on a Ludlum Model 19 Micro-R meter. Gamma rays are penetrating radiations indistinguishable from X-rays which can be absorbed by tissue in the human body. Furthermore, there are two parking attendants stationed at this parking lot on a 24-hour basis to collect fees, although initial readings taken on June 3, 1993, indicate that there were no levels above background where the attendants are stationed. U.S. EPA is monitoring the area to determine the potential dose. The Site is also surrounded by commercial and residential buildings, whose occupants use this parking lot and adjacent sidewalks. Situated 200 feet southeast of the Site is the North Pier shopping mall.

- b. high levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;

This factor is present at the Facility due to the existence of elevated gamma levels as high as 280 uR/hr on a Ludlum Model 19 Micro-R meter, as compared to 20 uR/hr for background as measured at the Site. These gamma levels may indicate higher levels in the soils because the parking lot is covered with asphalt and/or concrete, which attenuates radiation.

- c. other situations or factors which may pose threats to public health or welfare or the environment.

This factor is present at the Facility due to the property's potential for future development. Such construction might entail excavating into potentially contaminated soils for placement of building footings and cause increased releases into the environment and human exposure to contaminants.

ORDER

Based upon the foregoing Findings and Determinations, and pursuant to Section 106(a) of CERCLA, 42 U.S.C. Section 9606(a), it is hereby ordered and agreed that Respondent will undertake the following actions at the Facility:

1. Within sixty (60) calendar days after the effective date of this Order, the Respondent shall submit to U.S. EPA for approval, a Work Plan for the investigation and sampling activities ordered as set forth in Paragraph 4 below. The Work Plan shall provide a concise description of the activities to be conducted to comply with the requirements of this Order. The Work Plan shall be reviewed by U.S. EPA, which may approve, disapprove, require revisions, or modify the Work Plan. Respondent shall implement the Work Plan as finally approved by U.S. EPA, including any modifications. Once approved, the Work Plan shall be deemed to be incorporated into and made a fully enforceable part of this Order.

2. The Work Plan shall contain a site safety and health plan, sampling and analysis plan, and a schedule of the work to be performed. The site safety and health plan shall be prepared in accordance with the Occupational Safety and Health Administration (OSHA) regulations applicable to Hazardous Waste Operations and Emergency Response, 29 CFR Part 1910, and with Illinois Department of Nuclear Safety (IDNS) regulations pertaining to radiation workers, non-radiation workers, and the general public, 42 Illinois Administrative Code Part 340. The Work Plan and other submitted documents shall demonstrate that the Respondent can properly conduct the actions required by this Order.

3. Respondent shall retain a contractor qualified to undertake and complete the requirements of this Order, and shall notify U.S. EPA of the name of such contractor within five (5) business days of the effective date of this Order. U.S. EPA retains the right to disapprove of any, or all, of the contractors and/or subcontractors retained by the Respondent. In the event U.S. EPA disapproves of a selected contractor, Respondent shall retain a different contractor to perform the work, and such selection shall be made within two (2) business days following U.S. EPA's disapproval.

4. Within thirty (30) calendar days after U.S. EPA approval of the Work Plan, Respondent shall commence implementation of the Work Plan as approved or modified by U.S. EPA. Failure of the Respondent to properly implement all aspects of the Work Plan shall be deemed to be a violation of the terms of this Order. The Work Plan shall require the Respondent to perform, and complete within one hundred fifty (150) calendar days after approval, the following investigation and sampling activities:

- a. Develop and implement a Site Health and Safety Plan.
- b. Conduct land surveying to the extent necessary to locate all property boundaries and features, sample locations and areas having elevated radiation levels.
- c. Place borings in several locations for the purpose of measuring subsurface radiation levels. Measurements shall be recorded until the natural soils are reached or radiation levels reach background, whichever is the greatest depth.
- d. Collect soil samples from the borings and analyze for radionuclide content and RCRA characteristics. These results will then be used by the Respondent to correlate subsurface radiation levels and radionuclide content.

5. All materials removed from the Site shall be disposed of or treated at a facility approved by the On-Scene Coordinator and in accordance with the Resource Conservation and Recovery Act of 1976 (RCRA), 42 U.S.C. Section 6901, et seq., as amended, the U.S. EPA Revised Off-Site Policy, and all other applicable Federal, State, and local requirements.

6. On or before the effective date of this Order, the Respondent shall designate a Project Coordinator. The U.S. EPA has designated Verneta Simon, of the Emergency and Enforcement Response Branch, Response Section III, as its On-Scene Coordinator. The On-Scene Coordinator and the Project Coordinator shall be responsible for overseeing the implementation of this Order. To the maximum extent possible, communication between the Respondent and the U.S. EPA, and all documents, reports and approvals, and all other correspondence concerning the activities relevant to this Order, shall be directed through the On-Scene Coordinator and the Project Coordinator. During implementation of the Work Plan, the OSC and the Project Coordinator shall, whenever possible, operate by consensus, and shall attempt in good faith to resolve disputes informally through discussion of the issues.

7. The U.S. EPA and the Respondent shall each have the right to change their respective designated On-Scene Coordinator or Project Coordinator. U.S. EPA shall notify the Respondent, and

Respondent shall notify U.S. EPA, as early as possible before such a change is made. Notification may initially be verbal, but shall promptly be reduced to writing.

8. The U.S. EPA On-Scene Coordinator shall have the authority vested in an On-Scene Coordinator by the NCP, 40 CFR Part 300, as amended, including the authority to halt, conduct, or direct any work required by this Order, or to direct any other response action undertaken by U.S. EPA or the Respondent at the facility.

9. No extensions to the time frames in this Order shall be granted without sufficient cause. All extensions must be requested, in writing, and shall not be deemed accepted unless approved, in writing, by U.S. EPA.

10. This Order and all instructions by the U.S. EPA On-Scene Coordinator or designated alternate that are consistent with the National Contingency Plan and this Order shall be binding upon the Respondent, and the employees, agents, contractors, successors and assigns of the Respondent.

11. To the extent that the Facility or other areas where work under this Order is to be performed is owned by, or in possession of, someone other than the Respondent, Respondent shall attempt to obtain all necessary access agreements. In the event that after using it's best efforts the Respondent is unable to obtain such agreements, Respondent shall immediately notify U.S. EPA and U.S. EPA may then assist Respondent in gaining access, to the extent necessary to effectuate the response activities described herein, using such means as it deems appropriate.

12. Respondent shall provide access to the Facility to U.S. EPA employees, and U.S. EPA-authorized contractors, agents, and consultants at any time, and shall permit such persons to be present and move freely in the area in order to conduct inspections, including taking photographs and videotapes of the Facility, to do cleanup/stabilization work, to take samples, to monitor the work under this Order, and to conduct other activities which the U.S. EPA determines to be necessary.

13. This Order shall be effective on the date of signature by the Director, Waste Management Division.

14. Respondent shall provide a written monthly progress report to the On-Scene Coordinator regarding the actions and activities undertaken under this Order. At a minimum, these progress reports shall describe the actions that have been taken to comply with this Order, including all results of sampling and tests received or prepared by the Respondent and shall describe all significant work items planned for the next month.

15. Respondent agrees to retain for six years following completion of the activities required by this Order copies of all records, files and data relating to hazardous substances found on the Site, or related to the activities undertaken pursuant to this Order, whether or not those documents were created pursuant to this Order. Respondent shall acquire and retain copies of all documents relating to the Site that are in the possession of its contractors, agents and employees. Respondent shall notify U.S. EPA at least sixty (60) calendar days before any documents retained under this paragraph are to be destroyed. The documents retained under this paragraph shall be made available to the U.S. EPA upon request.

16. The United States reserves its right to seek reimbursement from the Respondent of all past costs and oversight costs it incurs with regards to the Lindsay Light II Site that are not inconsistent with the National Contingency Plan. Nothing in this Order shall be construed as a waiver of that right.

17. A notice, document, information, report, plan, approval, disapproval or other correspondence required to be submitted from one party to another under the Order shall be deemed submitted either when hand delivered or as of the date of receipt by certified mail, return receipt requested.

Submissions to the Respondent shall be submitted to:

The Chicago Dock & Canal Trust
c/o Mr. Charles Gardner, President
455 East Illinois Street
Suite 565
Chicago, Illinois 60611

Submissions to the U.S. EPA shall be submitted to:

Verneta Simon
On-Scene Coordinator
U.S. Environmental Protection Agency
77 West Jackson Boulevard, HSE-5J
Chicago, Illinois 60604

18. If any provision of this Order is deemed invalid or unenforceable, the remainder of this Order shall remain in full force and effect.

STIPULATED PENALTIES

19. For each day the Respondent fails to meet the deadlines set forth in the Consent Order and Work Plan, Respondent shall be liable as follows:

Penalty For:

	<u>First Week or Part Thereof</u>	<u>Each Following Week or Part Thereof</u>
Failure to Submit the Work Plan, Site Safety and Health Plan, Sampling and Analysis Plan or the Schedule of Work to be Performed	\$1,000	\$1,750
Failure to Commence Implementation of the Work Plan	\$1,000	\$1,750
Failure to Meet any Scheduled Deadline in the Work Plan	\$1,000	\$1,750
Failure to Submit Monthly Reports	\$ 250	\$ 400

20. All penalties which accrue pursuant to the requirements of this Order shall be paid within fifteen (15) business days of written demand by U.S. EPA. Payment shall be made to the EPA Hazardous Substances Superfund delivered to the U.S. EPA, Attn: Superfund Accounting, P.O. Box 70753, Chicago, Illinois 60673, in the form of a certified or cashier's check payable to "EPA Hazardous Substances Superfund." The face of the check should note that the payment is for the Lindsay Light II Site.

21. Pursuant to 31 U.S.C. Section 3717, interest shall accrue on any amount of overdue stipulated penalties at a rate established by the United States Treasury. Stipulated penalties shall accrue, but need not be paid, during any dispute resolution period concerning the particular penalties at issue. If Respondent prevails upon resolution, Respondent shall pay only such penalties as the resolution requires.

22. Payment of Stipulated Penalties will not relieve Respondent from complying with the terms of this Consent Order. U.S. EPA retains the right to seek any remedies or sanctions available to U.S. EPA by reason of Respondent's noncompliance with the provisions of this Consent Order that are not otherwise expressly limited by these Stipulated Penalty provisions.

PENALTIES FOR NONCOMPLIANCE

23. Respondent is advised pursuant to Section 106(b) of CERCLA, 42 U.S.C. Section 9606(b), that violation or subsequent failure or refusal to comply with this Order and any Work Plan approved under this Order, or any portion thereof, may subject the Respondent to a civil penalty of no more than \$25,000 per day for each day in which such violation occurs, or such failure to comply continues. In addition, failure to properly provide investigation and sampling actions upon the terms of this order, or other subsequent orders issued by U.S. EPA, may result in liability for punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C Section 9607(c)(3).

TERMINATION AND SATISFACTION

24. The Respondent shall submit a final report summarizing the actions taken to comply with this Order. The report shall contain, at a minimum: identification of the facility, a description of the locations and types of hazardous substances encountered at the facility upon the initiation of work performed under this Order, a chronology and description of the actions performed (including both the organization and implementation of response activities), a listing of the resources committed to perform the work under this Order (including financial, personnel, mechanical and technological resources), identification of all items that affected the actions performed under the Order and discussion of how all problems were resolved, a listing of quantities and types of materials removed, a discussion of removal and disposal options considered for those materials, a listing of the ultimate destination of those materials, and a presentation of the analytical results of all sampling and analyses performed and accompanying appendices containing all relevant paperwork accrued during the action (e.g., manifests, invoices, bills, contracts, permits). The final report shall also include an affidavit from a person who supervised or directed the preparation of that report. The affidavit shall certify under penalty of law that based on personal knowledge and appropriate inquiries of all other persons involved in preparation of the report, the information submitted is true, accurate and complete to the best of the affiant's knowledge and belief. The report shall be submitted within sixty (60) calendar days of completion of the work required by the U.S. EPA.

25. The provisions of this Order shall be deemed satisfied upon payment by Respondent of all sums due under the terms of this Order and upon the Respondent's receipt of written notice from U.S. EPA that the Respondent has demonstrated, to the satisfaction of U.S. EPA, that all of the terms of this Order,

including any additional tasks consistent with this Consent Order which U.S. EPA has determined to be necessary, have been completed.

INDEMNIFICATION

26. The Respondent agrees to indemnify and save and hold harmless the United States Government, its agencies, departments, agents, and employees, from any and all claims or causes of action arising from, or on account of, acts or omissions of the Respondent, its officers, employees, receivers, trustees, agents, successors or assigns, in carrying out the activities pursuant to this Order. The United States Government shall not be held as a party to any contract entered into by the Respondent in carrying out activities under this Order.

RESERVATION OF RIGHTS

27. This Order is not intended for the benefit of any third party and may not be enforced by any third party.

28. The U.S. EPA and the Respondent reserve all rights, claims, demands, and defenses, including defenses and denials of and to all determinations and findings, that they may have as to each other except as otherwise provided in this Order pursuant to any available legal authority. Nothing in this Order shall expand the Respondent's ability to obtain preenforcement review of U.S. EPA actions. Notwithstanding any reservation of rights, Respondent agrees to comply with the terms and conditions of this Order and consents to the jurisdiction of the U.S. EPA to enter into and enforce this Order.

29. Nothing herein is intended to release, discharge, limit or in any way affect any claim, causes of action or demands in law or equity which the parties may have against any persons, firm, trust, joint venture, partnership, corporation, or other entity not a party to this Order for any liability it may have arising out of, or relating in any way to, the generation, storage, treatment, handling, transportation, disposal, release or threat of release of any hazardous substance, hazardous waste, contaminant or pollutant at or from the Site. The parties to this Order hereby expressly reserve all rights, claims, demands and causes of action they may have against any and all other persons and entities who are not parties to this Order.

30. Nothing herein shall be construed: 1) to prevent U.S. EPA from exercising its right to disapprove of work performed by the Respondent; 2) to prevent U.S. EPA from seeking legal or equitable relief to enforce the terms of this order; 3) to prevent U.S. EPA from taking other legal or equitable action not

inconsistent with the Covenant Not To Sue in Paragraphs 41 through 43 of this Order; 4) to prevent U.S. EPA from requiring the Respondent in the future to perform additional activities pursuant to CERCLA, 42 U.S.C. Section 9601 et seq., or any other applicable law; or 5) to prevent U.S. EPA from undertaking response actions at the Site.

FORCE MAJEURE

31. The Respondent shall cause all work to be performed within the time limits set forth herein and in the approved Work Plan, unless performance is delayed by "force majeure". For purposes of this Order, "force majeure" shall mean an event arising from causes entirely beyond the control of the Respondent and its contractors which delays or prevents the performance of any obligation required by this Order. Increases in costs, financial difficulty, and normal inclement weather are examples of events that are not considered to be beyond the control of the Respondent.

32. Respondent shall notify the OSC within 24 hours after Respondent becomes aware of any event which Respondent contends constitutes a force majeure, with subsequent written notice within seven (7) calendar days of the event. Such written notice shall describe: 1) the nature of the delay, 2) the cause of the delay, 3) the expected duration of the delay, including any demobilization and remobilization resulting from the delay, 4) the actions which will be taken to prevent or mitigate further delay, and 5) the timetable by which the actions to mitigate the delay will be taken. Respondent shall implement all reasonable measures to avoid and/or minimize such delays. Failure to comply with the notice provision of this paragraph shall be grounds for U.S. EPA to deny Respondent an extension of time for performance. The Respondent shall have the burden of demonstrating by a preponderance of the evidence that the event is a force majeure, that the delay is warranted under the circumstances, and that best efforts were exercised to avoid and mitigate the effects of the delay. If U.S. EPA determines a delay is or was attributable to a force majeure, the time period for performance under this Order shall be extended as deemed necessary by the OSC to allow performance.

DISPUTE RESOLUTION

33. The Parties to this Order on Consent shall attempt to resolve expeditiously and informally any disagreements concerning implementation of this Order on Consent or any work required hereunder.

34. In the event that any dispute arising under this Order on Consent is not resolved expeditiously through informal means, any party desiring dispute resolution under this Section shall give prompt written notice to the other parties to the Order.

35. Within ten (10) calendar days of the service of notice of dispute pursuant to Paragraph 34 above, the party who gave notice shall serve on the other parties to this Order a written statement of the issues in dispute, the relevant facts upon which the dispute is based, and factual data, analysis or opinion supporting its position, and all supporting documentation on which such party relies (hereinafter the "Statement of Position"). The opposing parties shall serve their Statement of Position, including supporting documentation, no later than ten (10) calendar days after receipt of the complaining party's Statement of Position. In the event that these 10-day time periods for exchange of Statements of Position may cause a delay in the work, they shall be shortened upon and in accordance with notice by U.S. EPA.

36. An administrative record of any dispute under this Section shall be maintained by U.S. EPA. The record shall include the written notification of such dispute, and the Statements of Position served pursuant to the preceding paragraphs.

37. Upon review of the administrative record, the Director of the Waste Management Division, U.S. EPA, Region V, shall resolve the dispute consistent with the NCP and the terms of this Order.

NON-ADMISSION

38. The consent of the Respondent to the terms of this Order shall not constitute or be construed as an admission of liability or of U.S. EPA's findings or determinations contained in this Order in any proceeding other than a proceeding to enforce the terms of this Order.

CERCLA FUNDING

39. The Respondent waives any claims or demands for compensation or payment under Sections 106(b), 111 and 112 of CERCLA against the United States or the Hazardous Substance Superfund established by 26 U.S.C. §9507 for, or arising out of, any activity performed or expenses incurred pursuant to this Consent Order.

40. This Consent Order does not constitute any decision on preauthorization of funds under Section 111(a)(2) of CERCLA.

COVENANT NOT TO SUE

41. Upon termination and satisfaction of this Administrative Order pursuant to its terms, for and in consideration of the complete and timely performance by Respondent of the obligations agreed to in this Order, U.S. EPA hereby covenants not to sue Respondent for judicial imposition of damages or civil penalties for any failure to perform obligations agreed to in this Order except as otherwise reserved herein.

42. Performance of the terms of this Order resolves and satisfies the liability of the Respondent to U.S. EPA for work satisfactorily performed under this Order. U.S. EPA recognizes that, pursuant to Section 113 of CERCLA, the Respondent, upon having resolved its liability with the U.S. EPA for the matters expressly covered by this Order, shall not be liable for claims for contribution regarding matters addressed in this Order. Nothing in this Order precludes the Respondent from asserting any claims, causes of action or demands against potentially responsible parties (PRPs) who are not parties to this Order for indemnification, contribution, or cost recovery.

43. In consideration of the actions to be performed by the Respondent under this Order, the U.S. EPA covenants not to sue the Respondent, its successors or assigns for any and all claims which are available to the U.S. as against the Respondent under Sections 106 and 107 of CERCLA concerning all matters satisfactorily performed.

SUBSEQUENT AMENDMENT

44. This Consent Order may be amended by mutual agreement of U.S. EPA and the Respondent. Any amendment of this Consent Order shall be in writing, signed by U.S. EPA and the Respondent and shall have as the effective date, that date on which such amendment is signed by U.S. EPA.

LINDSAY LIGHT II SITE
CHICAGO, ILLINOIS

SIGNATORIES

Each undersigned representative of a signatory to this Administrative Order on Consent certifies that he or she is fully authorized to enter into the terms and conditions of this Order and to bind such signatory, its directors, officers, employees, agents, successors and assigns, to this document.

Agreed this 16th day of January, 1994.

By Charles K. [Signature] President
The Chicago Dock & Canal Trust

The above being agreed and consented to, it is so ORDERED
this 27th day of January, 1994.

By [Signature]
William E. Muno, Director
Waste Management Division
U.S. Environmental Protection Agency
Region V, Complainant

bcc: Docket Analyst, ORC (CS-3T)
Marc Radell, ORC (CS-3T)
Verneta Simon, OSC (HSE-5J)
Debbie Regel, ESS (HSE-5J)
Jose Cisneros, ESS (HSE-5J)
Mary Ellen Ryan, SFAS (MF-10J)
Oliver Warnsley, CRS (HSM-5J)
EERB Site File
EERB Read File
Toni Lesser, Public Affairs (P-19J) w/out attachments
Sheila Huff, Department of Interior
Larry Jensen, ARD (AT-18J)

STATE SUPERFUND COORDINATORS:

Illinois:

Gary King, Deputy Manager
Division of Land Pollution Control
Illinois Environmental Protection
Agency
2200 Churchill Road
Springfield, Illinois 62706

Minnesota:

James L. Warner, Chief
Groundwater and Solid Waste
Division
Minnesota Pollution
Control Agency
520 Lafayette Road
St. Paul, Minnesota 55155

Indiana:

Greta J. Hawvermale
Assistant Commissioner for
Environmental Response
Indiana Department of
Environmental Management
P.O. Box 6015, Room 1255N
Indianapolis, Indiana 46206-6015

Ohio:

Janice A. Carlson
Acting Chief
Division of Emergency & Remedial
Response
Ohio Environmental Protection
Agency
1800 WaterMark Drive
Columbus, Ohio 43266-0149

Michigan:

Alan Howard, Chief
Environmental Response Division
Michigan Department of Natural
Resources
Stevens T. Mason Building
P.O. Box 30028
Lansing, Michigan 48909

Wisconsin:

Paul P. Didier, Director
Wisconsin Department of
Natural Resources
P.O. Box 7921
101 South Webster Street
Madison, Wisconsin 53707

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 5

IN THE MATTER OF:

Lindsay Light II Site
Chicago, Illinois

Respondents:

The Chicago Dock & Canal Trust
Kerr-McGee Chemical Corporation-

) Docket No. V-W-96-C-35
)
) ADMINISTRATIVE ORDER
) PURSUANT TO SECTION 106(a)
) OF THE COMPREHENSIVE
) ENVIRONMENTAL RESPONSE,
) COMPENSATION, AND
) LIABILITY ACT OF 1980,
) AS AMENDED, 42 U.S.C.
) SECTION 9606(a)

I. JURISDICTION AND GENERAL PROVISIONS

This Order is issued pursuant to the authority vested in the President of the United States by Section 106(a) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. § 9606(a), and delegated to the Administrator of the United States Environmental Protection Agency ("U.S. EPA") by Executive Order No. 12580, January 23, 1987, 52 Federal Register 2923, and further delegated to the Regional Administrators by U.S. EPA Delegation Nos. 14-14-A and 14-14-B, and to the Director, Superfund Division, Region 5, by Regional Delegation Nos. 14-14-A and 14-14-B.

This Order pertains to property located at 316 East Illinois Street, Chicago, Illinois (the "Lindsay Light II Site" or the "Site"). This Order requires the Respondents to conduct removal activities described herein to abate an imminent and substantial endangerment to the public health, welfare or the environment that may be presented by the actual or threatened release of hazardous substances at or from the Site.

U.S. EPA has notified the State of Illinois of this action pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

II. PARTIES BOUND

This Order applies to and is binding upon Respondents and Respondents' heirs, receivers, trustees, successors and assigns. Any change in ownership or corporate status of Respondents including, but not limited to, any transfer of assets or real or personal property shall not alter such Respondents' responsibilities under this Order. Respondents are jointly and severally liable for carrying out all activities required by this Order. Compliance or noncompliance by one or more Respondent with any provision of this Order shall not excuse or justify noncompliance by any other Respondent.

Respondents shall ensure that their contractors, subcontractors, and representatives comply with this Order. Respondents shall be responsible for any noncompliance.

III. FINDINGS OF FACT

Based on available information, including the Administrative Record in this matter, U.S. EPA hereby finds that:

1. The Lindsay Light II Site ("the Site" or "the Facility") is located at 316 East Illinois Street, Chicago, Cook County, Illinois. The Site is situated in an urban area called the Gold Coast, and is surrounded by commercial and residential buildings. A shopping mall is located approximately 200 feet to the southeast. The Chicago River is located 1 mile south of the Site, and Lake Michigan is about 1.5 miles east of the Site.
2. The Site is currently a parking lot operated by General Parking, and owned by the Chicago Dock and Canal Trust ("CDCT").
3. Until 1936, Lindsay Light manufactured incandescent gas mantels at 161 East Grand, which is .25 miles from the Site. It is unknown if they worked elsewhere; however, Sanborn maps from 1906 do show Lindsay Light being at other Chicago locations. During 1931-1936, the company moved its operations to West Chicago, Illinois.
4. The principal ingredient in gas mantle manufacture is thorium as a nitrate. Small amounts of cerium, beryllium and magnesium nitrates are also used. Thorium occurs principally as the parent radionuclide thorium-232 in association with its daughter products in a decay sequence known as the Thorium Decay Series. Thorium radionuclides are also found in the Uranium Decay Series and the Actinium Decay Series. It is believed that the principal source of contamination at this Site is the Thorium Decay Series.
5. It is unclear what Lindsay Light actually did at 316 East Illinois; however, records from The Chicago Dock and Canal Trust indicate this Site was a stable, and that Lindsay Light leased portions of the building from The Chicago Dock and Canal Trust from 1915-1933.
6. On June 3, 1993, U.S. EPA and the Illinois Department of Nuclear Safety conducted a joint investigation at the Site. This investigation verified the presence of radioactivity at levels clearly above natural background. Gamma readings were found as high as 280 uR/hr on a Ludlum Model 19 Micro-R meter. Background measured at the Site had gamma readings of 20 uR/hr.

7. The Chicago Dock and Canal Trust entered into an Administrative Order by Consent ("AOC") with U.S. EPA to study the extent of subsurface radiation and radionuclide content before excavation. The AOC was signed by U.S. EPA on January 27, 1994, and the extent of contamination ("EOC") study was completed by CDCT in May 1994. The final report concerning the extent of contamination was delivered to U.S. EPA on October 17, 1995, and was approved on March 13, 1996.
8. A brief summary of the final report approved by U.S. EPA on March 13, 1996, is as follows: 12 areas exhibit elevated gamma levels; the maximum contamination depth extends to 2.5 meters (8 feet) below the ground surface; and Resource Conservation and Recovery Act ("RCRA")-characteristic waste is not present on-site. The highest gamma level is 252 times above background, or 1.1 milliRoentgen per hour.
9. Activities completed at this Site, besides the extent of contamination study, have been the voluntary placement by CDCT of notices at the entrances to the parking lot informing patrons of the risks associated with the lot.

IV. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set forth above, and the Administrative Record supporting these removal actions, U.S. EPA determines that:

1. The Lindsay Light II Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).
2. Radionuclides are "hazardous substances" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).
3. Each Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).
4. Respondent The Chicago Dock & Canal Trust is the present "owner" and "operator" of the Lindsay Light II Site, as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20). Respondent Kerr-McGee Chemical Corporation is a person who is the corporate successor of the Lindsay Light Company. The Lindsay Light Company was the operator of the Lindsay Light II Site at the time of disposal of any hazardous substances, or who arranged for disposal or transport for disposal of hazardous substances at the Lindsay Light II Site. Respondents are therefore liable persons under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

5. The conditions described in the Findings of Fact above constitute an actual or threatened "release" into the "environment" as defined by Sections 101(8) and (22) of CERCLA, 42 U.S.C. §§ 9601(8) and (22).

6. The conditions present at the Site constitute a threat to public health, welfare, or the environment based upon the factors set forth in Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan, as amended ("NCP"), 40 CFR Part 300. These factors include, but are not limited to, the following:

a. actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants or contaminants;

This factor is present at the Site due to the existence of a public parking lot on property found to have gamma readings measured as high as 1.1 milliRoentgen per hour. This reading is 252 times the background level measured for the Site.

Gamma rays are penetrating radiation indistinguishable from X-rays which can be absorbed by tissue in the human body, thereby increasing the cancer risk for the person exposed. The excess risk to a transient spending 29 minutes per day for a 250 day work year at the peak exposure spot is 10^{-4} . Transients were judged to be parking lot customers, people using the lot for a short cut, or temporary workers.

The Site is surrounded by two-foot high steel guardrails, which do not totally restrict access. Furthermore, there are two parking attendants stationed at this parking lot on a 24-hour basis to collect fees, although initial readings taken on June 3, 1993, indicate that there were no levels above background where the attendants are stationed. Again, such an exposure entails cancer risk that would have no personal or societal benefit. Direct measurement with survey instruments at the present parking lot attendant stations found background radiation levels which were confirmed with longer measurements using thermoluminescent dosimeters ("TLDs") placed in the ticket booths between June 3, 1993, and June 30, 1993. Conditions at the Site have not changed since the site assessment on June 3, 1993. There is no guarantee that the ticket booths could not be moved to the peak point of gamma readings at some future time, thereby introducing the potential for exposure and risk to be actualized.

The EOC study confirmed that elevated radioactivity levels are due to past industrial processes. The Site is also surrounded by commercial and residential buildings, whose occupants use this parking lot and adjacent sidewalks. Situated 200 feet southeast of the Site is the North Pier shopping mall.

b. high levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;

This factor is present at the Site due to the existence of elevated gamma exposure levels which validates subsurface deposits of radiological contaminants. The dominant concern is intrusion into these materials that will contaminate the intruder and their equipment and, further, lead to dispersal or spreading of the contaminants from their present locations. Such a scenario probably has arisen, and could again arise, with parking lot excavation where workers and their equipment are contaminated by radioactive soils, dry soil dispersed in the wind, and excavation spoils moved off-site. The number of people exposed could greatly increase and might include workers who subsequently use contaminated machinery, residents near the parking lot who might come in contact with wind dispersed soils, and use of excavation spoils. Such spreading could occur within downtown Chicago where the parking lot is located and out for several miles depending upon where workers reside and where spoils are used.

c. other situations or factors that may pose threats to public health or welfare or the environment;

This factor is present at the Site due to the property's planned future development. Such construction would entail excavating into potentially contaminated soils for placement of building footings and cause increased releases into the environment and human exposure to contaminants. Also, it has not been determined whether subsurface contaminants are soluble. If they are, there could be spreading via groundwater.

This Site appears to be gridded with sewer lines. These could be conduits for the spread of both soluble and insoluble materials off-site, for extension of the region of contamination, and for an increase in the potential for sewer workers to be exposed to contaminants.

7. The actual or threatened release of hazardous substances from the Site may present an imminent and substantial endangerment to the public health, welfare, or the environment within the meaning of Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

8. The removal actions required by this Order are necessary to protect the public health, welfare, or the environment, and are not inconsistent with the NCP and CERCLA.

V. ORDER

Based upon the foregoing Findings of Fact, Conclusions of Law, Determinations, and the Administrative Record for this Site, U.S. EPA hereby orders that Respondents perform the following actions:

1. Notice of Intent to Comply

Respondents shall notify U.S. EPA in writing within 3 business days after the effective date of this Order of Respondents' irrevocable intent to comply with this Order. Failure of each Respondent to provide such notification within this time period shall be a violation of this Order.

2. Designation of Contractor, Project Coordinator, and On-Scene Coordinator

Respondents shall perform the removal actions themselves or retain contractors to implement the removal actions. Respondents shall notify U.S. EPA of Respondents' qualifications or the name and qualifications of such contractors, whichever is applicable, within 10 business days of the effective date of this Order. Respondents shall also notify U.S. EPA of the name and qualifications of any other contractors or subcontractors retained to perform work under this Order at least 5 business days prior to commencement of such work. U.S. EPA retains the right to disapprove of the Respondents or any of the contractors and/or subcontractors retained by the Respondents. If U.S. EPA disapproves a selected contractor, Respondents shall retain a different contractor within 2 business days following U.S. EPA's disapproval and shall notify U.S. EPA of that contractor's name and qualifications within 3 business days of U.S. EPA's disapproval.

Within 10 business days after the effective date of this Order, the Respondents shall designate a Project Coordinator who shall be responsible for administration of all the Respondents' actions required by the Order and submit the designated coordinator's name, address, telephone number, and qualifications to U.S. EPA. To the greatest extent possible, the Project Coordinator shall be present on-site or readily available during site work. U.S. EPA retains the right to disapprove of any Project Coordinator named by the Respondents. If U.S. EPA disapproves a selected Project Coordinator, Respondents shall retain a different Project Coordinator within 3 business days following U.S. EPA's disapproval and shall notify U.S. EPA of that person's name and qualifications within 4 business days of U.S. EPA's disapproval. Receipt by Respondents' Project Coordinator of any notice or communication from U.S. EPA relating to this Order shall constitute receipt by all Respondents.

The U.S. EPA has designated Verneta Simon of the Emergency Response Branch, Region 5, as its On-Scene Coordinator (OSC). Respondents shall direct all submissions required by this Order to the OSC at U.S. EPA, 77 West Jackson Boulevard, SE-5J, Chicago, Illinois, 60604-3590, by certified or express mail. Respondents shall also send a copy of all submissions to Nancy-Ellen Zusman, Assistant Regional Counsel, 77 West Jackson Boulevard, C-29A, Chicago, Illinois, 60604-3590. All Respondents are encouraged to make their submissions to U.S. EPA on recycled paper (which includes significant postconsumer waste paper content where possible) and using two-sided copies.

3. Work to Be Performed

Respondents shall perform, at a minimum, the following response activities:

- a. Develop and implement a Site Health and Safety Plan.
- b. Develop and implement Site security measures.
- c. Develop and implement an air monitoring program.
- d. Remove contamination until the cleanup criterion of 5 picoCuries per gram total radium (radium-226 + radium-228) over background is achieved. This cleanup criterion will be met in each 15 centimeter layer below the surface. Averaging over areas up to 100 square meters will be allowed, but only after reasonable efforts have been made to achieve levels As Low As Reasonably Achievable ("ALARA"). It is not U.S. EPA's intent to leave any elevated areas of contamination if at all possible.
- e. Establish local background for radium-226 and radium-228 from four soil samples taken on the property at points where the gamma exposure rates are lowest plus eight soil samples taken off-site, but in the immediate vicinity, of the parking lot.
- f. Transport and dispose of all characterized or identified hazardous substances, pollutants, wastes, or contaminants at a RCRA/CERCLA/IDNS-approved disposal facility in accordance with the U.S. EPA off-site policy.
- g. Conduct off-site surveying and sampling as necessary and, at a minimum, implement the standards of 40 Code of Federal Regulations ("CFR") 192, if deemed necessary should contamination be discovered beyond current site boundaries.

- h. . Backfill all excavations with suitable material, and if soil, test borrow source for radioactivity and other pertinent characteristics in 40 CFR Part 261.

3.1 Work Plan and Implementation

Within 15 calendar days after the effective date of this Order, the Respondents shall submit to U.S. EPA for approval a draft Work Plan for performing the removal activities set forth above. The draft Work Plan shall provide a description of, and an expeditious schedule for, the activities required by this Order.

U.S. EPA may approve, disapprove, require revisions to, or modify the draft Work Plan. If U.S. EPA requires revisions, Respondents shall submit a revised draft Work Plan within 7 business days of notification. Respondents shall implement the Work Plan as finally approved in writing by U.S. EPA in accordance with the schedule approved by U.S. EPA. Once approved, or approved with modifications, the Work Plan, the schedule, and any subsequent modifications shall be fully enforceable under this Order. Respondents shall notify U.S. EPA at least 48 hours prior to performing any on-site work pursuant to the U.S. EPA approved work plan.

Respondents shall not commence or undertake any removal actions at the Site without prior U.S. EPA approval.

3.2 Health and Safety Plan

Within 15 calendar days after the effective date of this Order, the Respondents shall submit a plan for U.S. EPA review and comment that ensures the protection of the public health and safety during performance of on-site work under this Order. This plan shall comply with applicable Occupational Safety and Health Administration (OSHA) regulations found at 29 CFR Part 1910. If U.S. EPA determines it is appropriate, the plan shall also include contingency planning. Respondents shall incorporate all changes to the plan recommended by U.S. EPA, and implement the plan during the pendency of the removal action.

3.3 Quality Assurance and Sampling

All sampling and analyses performed pursuant to this Order shall conform to U.S. EPA direction, approval, and guidance regarding sampling, quality assurance/quality control (QA/QC), data validation, and chain of custody procedures. Respondents shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that complies with U.S. EPA guidance. Upon request by U.S. EPA, Respondents shall have such a laboratory analyze samples submitted by U.S. EPA for quality assurance monitoring. Respondents shall provide to U.S. EPA the quality assurance/quality control procedures followed by all sampling teams and laboratories performing data collection and/or

analysis. Respondents shall also ensure provision of analytical tracking information consistent with OSWER Directive No. 9240.0-2B, "Extending the Tracking of Analytical Services to PRP-Lead Superfund Sites."

Upon request by U.S. EPA, Respondents shall allow U.S. EPA or its authorized representatives to take split and/or duplicate samples of any samples collected by Respondents or their contractors or agents while performing work under this Order. Respondents shall notify U.S. EPA not less than 3 business days in advance of any sample collection activity. U.S. EPA shall have the right to take any additional samples that it deems necessary.

3.4 Reporting

Respondents shall submit a monthly written progress report to U.S. EPA concerning activities undertaken pursuant to this Order, beginning 30 calendar days after the date of U.S. EPA's approval of the Work Plan, until termination of this Order, unless otherwise directed by the OSC. These reports shall describe all significant developments during the preceding period, including the work performed and any problems encountered, analytical data received during the reporting period, and developments anticipated during the next reporting period, including a schedule of work to be performed, anticipated problems, and planned resolutions of past or anticipated problems.

Any Respondent that owns any portion of the Site, and any successor in title shall, at least 30 days prior to the conveyance of any interest in real property at the Site, give written notice of this Order to the transferee and written notice of the proposed conveyance to U.S. EPA and the State. The notice to U.S. EPA and the State shall include the name and address of the transferee. The party conveying such an interest shall require that the transferee will provide access as described in Section V.4 (Access to Property and Information).

3.5 Final Report

Within 60 calendar days after completion of all removal actions required under this Order, the Respondents shall submit for U.S. EPA review a final report summarizing the actions taken to comply with this Order. The final report shall conform to the requirements set forth in Section 300.165 of the NCP. The final report shall also include a good faith estimate of total costs incurred in complying with the Order, a listing of quantities and types of materials removed, a discussion of removal and disposal options considered for those materials, a listing of the ultimate destinations of those materials, a presentation of the analytical results of all sampling and analyses performed, and accompanying appendices containing all relevant documentation generated during the removal action (e.g., manifests, invoices, bills, contracts, and permits).

The final report shall also include the following certification signed by a person who supervised or directed the preparation of that report:

Under penalty of law, I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is true, accurate, and complete.

4. Access to Property and Information

Respondents shall provide or obtain access as necessary to the Site and all appropriate off-site areas, and shall provide access to all records and documentation related to the conditions at the Site and the activities conducted pursuant to this Order. Such access shall be provided to U.S. EPA employees, contractors, agents, consultants, designees, representatives, and State of Illinois representatives. These individuals shall be permitted to move freely at the Site and appropriate off-site areas in order to conduct activities which U.S. EPA determines to be necessary. Respondents shall submit to U.S. EPA, upon request, the results of all sampling or tests and all other data generated by Respondents or their contractors, or on the Respondents' behalf during implementation of this Order.

Where work under this Order is to be performed in areas owned by or in possession of someone other than Respondents, Respondents shall obtain all necessary access agreements within 14 calendar days after the effective date of this Order, or as otherwise specified in writing by the OSC. Respondents shall immediately notify U.S. EPA if, after using their best efforts, they are unable to obtain such agreements. Respondents shall describe in writing their efforts to obtain access. U.S. EPA may then assist Respondents in gaining access, to the extent necessary to effectuate the response activities described herein, using such means as U.S. EPA deems appropriate.

5. Record Retention, Documentation, Availability of Information

Respondents shall preserve all documents and information, in their possession or the possession of their contractors, subcontractors or representatives, relating to work performed under this Order, or relating to the hazardous substances found on or released from the Site, for six years following completion of the removal actions required by this Order. At the end of this six year period and at least 60 days before any document or information is destroyed, Respondents shall notify U.S. EPA that such documents and information are available to U.S. EPA for inspection, and upon request, shall provide the originals or copies of such documents and information to U.S. EPA. In addition, Respondents shall provide documents and information retained under this Section at any time before expiration of the six year period at the written request of U.S. EPA.

6. Off-Site Shipments

All hazardous substances, pollutants or contaminants removed off-site pursuant to this Order for treatment, storage or disposal shall be treated, stored, or disposed of at a RCRA/CERCLA/IDNS-approved disposal facility in compliance, as determined by U.S. EPA, with the U.S. EPA Off-Site Rule, 40 CFR § 300.440, 58 Federal Register 49215 (Sept. 22, 1993).

7. Compliance With Other Laws

All actions required pursuant to this Order shall be performed in accordance with all applicable local, state, and federal laws and regulations except as provided in CERCLA Section 121(e) and 40 CFR Section 300.415(i). In accordance with 40 CFR Section 300.415(i), all on-site actions required pursuant to this Order shall, to the extent practicable, as determined by U.S. EPA, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements under federal environmental or state environmental or facility siting laws.

8. Emergency Response and Notification of Releases

If any incident, or change in Site conditions, during the activities conducted pursuant to this Order causes or threatens to cause an additional release of hazardous substances from the Site or an endangerment to the public health, welfare, or the environment, the Respondents shall immediately take all appropriate action to prevent, abate or minimize such release, or endangerment caused or threatened by the release. Respondents shall also immediately notify the OSC or, in the event of his/her unavailability, shall notify the Regional Duty Officer, Emergency Response Branch, Region 5 at (312) 353-2318, of the incident or Site conditions.

Respondents shall submit a written report to U.S. EPA within 7 business days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. Respondents shall also comply with any other notification requirements, including those in CERCLA Section 103, 42 U.S.C. § 9603, and Section 304 of the Emergency Planning and Community Right-To-Know Act, 42 U.S.C. § 11004.

VI. AUTHORITY OF THE U.S. EPA ON-SCENE COORDINATOR

The OSC shall be responsible for overseeing the implementation of this Order. The OSC shall have the authority vested in an OSC by the NCP, including the authority to halt, conduct, or direct any work required by this Order, or to direct any other response action

undertaken by U.S. EPA or Respondents at the Site. Absence of the OSC from the Site shall not be cause for stoppage of work unless specifically directed by the OSC.

U.S. EPA and Respondents shall have the right to change their designated OSC or Project Coordinator. U.S. EPA shall notify the Respondents, and Respondents shall notify U.S. EPA, as early as possible before such a change is made, but in no case less than 24 hours before such a change. Notification may initially be made orally, but shall be followed promptly by written notice.

VII. PENALTIES FOR NONCOMPLIANCE

Violation of any provision of this Order may subject Respondents to civil penalties of up to \$25,000 per violation per day, as provided in Section 106(b)(1) of CERCLA, 42 U.S.C. § 9606(b)(1).

Respondents may also be subject to punitive damages in an amount up to three times the amount of any cost incurred by the United States as a result of such violation, as provided in Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Should Respondents violate this Order or any portion hereof, U.S. EPA may carry out the required actions unilaterally, pursuant to Section 104 of CERCLA, 42 U.S.C. § 9604, and/or may seek judicial enforcement of this Order pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606.

VIII. REIMBURSEMENT OF COSTS

Respondents shall reimburse U.S. EPA, upon written demand, for all response costs incurred by the United States in overseeing Respondents' implementation of the requirements of this Order. U.S. EPA may submit to Respondents on a periodic basis a bill for all response costs incurred by the United States with respect to this Order. U.S. EPA's Itemized Cost Summary, or such other summary as certified by U.S. EPA, shall serve as the basis for payment.

Respondents shall, within 30 days of receipt of the bill, remit a cashier's or certified check for the amount of those costs made payable to the "Hazardous Substance Superfund," to the following address:

U.S. Environmental Protection Agency
Superfund Accounting
P.O. Box 70753
Chicago, Illinois 60673

Respondents shall simultaneously transmit a copy of the check to the Director, Superfund Division, U.S. EPA Region 5, 77 West Jackson Blvd., Chicago, Illinois, 60604-3590. Payments shall be

XI. MODIFICATIONS

Modifications to any plan or schedule may be made in writing by the OSC or at the OSC's oral direction. If the OSC makes an oral modification, it will be memorialized in writing within 7 business days; however, the effective date of the modification shall be the date of the OSC's oral direction. The rest of the Order, or any other portion of the Order, may only be modified in writing by signature of the Director, Superfund Division, Region 5.

If Respondents seek permission to deviate from any approved plan or schedule, Respondents' Project Coordinator shall submit a written request to U.S. EPA for approval outlining the proposed modification and its basis.

No informal advice, guidance, suggestion, or comment by U.S. EPA regarding reports, plans, specifications, schedules, or any other writing submitted by the Respondents shall relieve Respondents of their obligations to obtain such formal approval as may be required by this Order, and to comply with all requirements of this Order unless it is formally modified.

XII. NOTICE OF COMPLETION

After submission of the Final Report, Respondents may request that U.S. EPA provide a Notice of Completion of the work required by this Order. If U.S. EPA determines, after U.S. EPA's review of the Final Report, that all work has been fully performed in accordance with this Order, except for certain continuing obligations required by this Order (e.g., record retention), U.S. EPA will provide written notice to the Respondents. If U.S. EPA determines that any removal activities have not been completed in accordance with this Order, U.S. EPA will notify the Respondents, provide a list of the deficiencies, and require that Respondents modify the Work Plan to correct such deficiencies. The Respondents shall implement the modified and approved Work Plan and shall submit a modified Final Report in accordance with the U.S. EPA notice. Failure to implement the approved modified Work Plan shall be a violation of this Order.

XIII. ACCESS TO ADMINISTRATIVE RECORD

The Administrative Record supporting these removal actions is available for review during normal business hours in the U.S. EPA Record Center, Region 5, 77 W. Jackson Blvd., Seventh Floor, Chicago, Illinois. Respondents may contact Nancy-Ellen Zusman, Assistant Regional Counsel, at (312) 866-5825 to arrange to review the Administrative Record. An index of the Administrative Record is attached to this Order.

XIV. OPPORTUNITY TO CONFER

Within 3 business days after receipt of this Order, Respondents may request a conference with U.S. EPA. Any such conference shall be held within 5 business days from the date of the request, unless extended by agreement of the parties. At any conference held pursuant to the request, Respondents may appear in person or be represented by an attorney or other representative.

If a conference is held, Respondents may present any information, arguments or comments regarding this Order. Regardless of whether a conference is held, Respondents may submit any information, arguments or comments (including justifications for any assertions that the Order should be withdrawn against a Respondent), in writing to U.S. EPA within 2 business days following the conference, or within 7 business days of receipt of the Order if no conference is requested. This conference is not an evidentiary hearing, does not constitute a proceeding to challenge this Order, and does not give Respondents a right to seek review of this Order. Requests for a conference shall be directed to Nancy-Ellen Zusman, Assistant Regional Counsel, at (312) 886-5825. Written submittals shall be directed as specified in Section V.2 of this Order.

XV. SEVERABILITY

If a court issues an order that invalidates any provision of this Order or finds that Respondents have sufficient cause not to comply with one or more provisions of this Order, Respondents shall remain bound to comply with all provisions of this Order not invalidated by the court's order.

XVI. EFFECTIVE DATE

This Order shall be effective 10 business days following issuance unless a conference is requested as provided herein. If a conference is requested, this Order shall be effective 5 business days after the day of the conference.

IN THE MATTER OF:

LINDSAY LIGHT II SITE
CHICAGO, ILLINOIS

IT IS SO ORDERED

BY: _____

W. E. Muno
William E. Muno, Director
Superfund Division
United States
Environmental Protection Agency
Region 5

DATE: 6/6/86

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR
LINDSAY LIGHT II
CHICAGO, ILLINOIS

UPDATE #3
JUNE 3, 1996

<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
07/26/95	STS Consultants Ltd.	U.S. EPA	The Chicago Dock & Canal Trust Report for Characterization Investigation: Gamma Radiation Survey, Lindsay Light II Site, Chicago, IL w/Attachments A-E (3 Volumes)	1324

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR
LINDSAY LIGHT II
CHICAGO, ILLINOIS

UPDATE #2 (REVISED)
APRIL 1, 1996

<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
04/22/96	Simon, V., U.S. EPA	Muno, W., U.S. EPA	Action Memorandum: Determination of Threat to Public Health and the Environment at the Lindsay Light II Site, Chicago, IL	40

**U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION**

**ADMINISTRATIVE RECORD
FOR
LINDSAY LIGHT II
CHICAGO, ILLINOIS**

**UPDATE #1
SEPTEMBER 18, 1995**

DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
09/00/93	Rogers & Associates Engineering Corporation	Chicago Dock & Canal Trust	Work Plan for Characterization of Radioactive Contamination, 316 East Illinois St., Chicago, Illinois: Appendix E, Supplemental; Other Sampling	17
10/05/95	Simon, V., U.S. EPA	Muno, W., U.S. EPA	Action Memorandum: Determination of Threat to Public Health or the Environment at the Lindsay Light II Site	22

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR
LINDSAY LIGHT II SITE
CHICAGO, ILLINOIS

ORIGINAL
May 2, 1994

<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
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1. Minutes from meetings of Lindsay Light II Company.
1922, 1924, 1925, 1929, 1931.
2. Chicago Tribune article.
July 1993.
3. 104(e) response from Kerr-McGee Corporation.
January 3, 1994.
4. Press release issued by The Chicago Dock & Canal Trust.
July 6, 1993.
5. Enforcement Confidential Addendum from Action Memo.
April 1996.

**LIST OF RESPONDENTS RECEIVING UNILATERAL ADMINISTRATIVE ORDER
LINDSAY LIGHT II SITE**

Kerr-McGee Chemical Corporation
c/o Richard A. Meserve, Esq.
Covington & Burling
1201 Pennsylvania Avenue, N.W.
P.O. Box 7566
Washington, D.C. 20044-7566

Chicago Dock & Canal Trust
c/o Vincent S. Oleskiewicz, Esq.
Baker & McKenzie
One Prudential Plaza
130 East Randolph Drive
Chicago, Illinois 60601

**IMPACTED RIGHTS-OF-WAY
RIVER EAST CENTER
MIXED USE DEVELOPMENT
300 EAST ILLINOIS STREET
CHICAGO, ILLINOIS**

(2 PAGES)

**WORK PLAN FOR SITE RADIATION SURVEY
AND EXCAVATION SOIL MANAGEMENT
GRAND PIER CENTER
CHICAGO, ILLINOIS**

**AVAILABLE FOR VIEWING AT U.S. EPA REGION V RECORDS CENTER
77 W. JACKSON BLVD., 7TH FLOOR, CHICAGO, ILLINOIS**

HIGHWAY AUTHORITY AGREEMENT
FOR RIGHTS-OF-WAY ADJACENT TO
RIVER EAST L.L.C.
LINDSAY LIGHT II PROJECT
HEALTH & SAFETY PLAN

(INTENTIONALLY OMITTED)

Permit Applicant

Date

Permit Applicant
Project Coordinator
Health & Safety Coordinator

Date